MINING AND PETROLEUM STANDARD

AND

AMERICAN GAS-LIGHT JOURNAL.

Devoted to Mining, Petroleum, Gas, Water Supply, and Scientific Subjects Generally.

PUBLISHING OFFICE NO. 22 PINE STREET.

VOLUME VIII—No. 18.
WHOLE No. 174.

NEW YORK, SATURDAY, MARCH 16, 1867.

$3 PER ANNUM
IN ADVANCE.

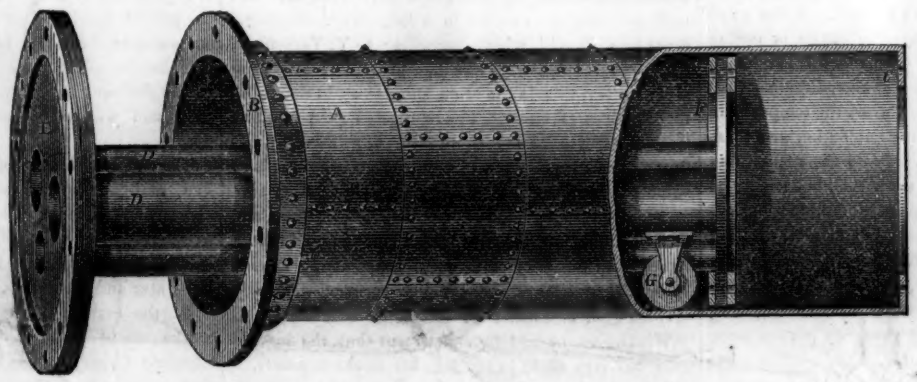
Improved Steam Boiler.

The object in constructing a boiler in the manner shown in the engraving is to enable the flues to be scaled easily and completely, and to repair such parts as are otherwise inaccessible without taking the boiler to pieces.

The shell, A, is furnished with flanges, B and C, at each end. One of the flanges is placed in the interior and the other on the exterior of the boiler; the flues, D D, are riveted in the usual way to the heads, E and F, which are made to fit the flanges. On removing the bolts which secure the heads to the flanges, the smaller head, F, may be drawn through the boiler, thus withdrawing the flues from the shell, as shown. The roller, G, placed on the flue, near the inside and smaller head, facilitates the passage through the shell. The engraving represents an ordinary cylindrical boiler, such as is commonly used on the western rivers, although these have but a pair of internal flues. It is often convenient, in the absence of any better method, to cut away sound portions of the boiler, to enable the workmen to reach parts that it is necessary to repair. It is manifest that my invention may be applied with advantage to almost any of the systems of construction that have been hitherto adopted.

The attention of the miner is particularly called to this boiler, where he gets all the advantages of a tubular boiler and cylinder boiler combined. It is made to set in a common brick arch, like an ordinary cylinder boiler, and the fire may be returned through the flues as often as required; and in case of an accident or failure of one of the flues, a common blacksmith can take out the flues and repair it, substitute a new one, or leave out the flue altogether and stop up the holes with a "patch" on each head—and the boiler is ready for use again, which saves thousands of dollars in time and money over the present mode of constructing flue boilers.

Further information, and rights to manufacture can be obtained of the inventor, A. Hitchcook, 4 and 6 Pine street., N. Y.



HITCHCOCK'S IMPROVED STEAM BOILER.

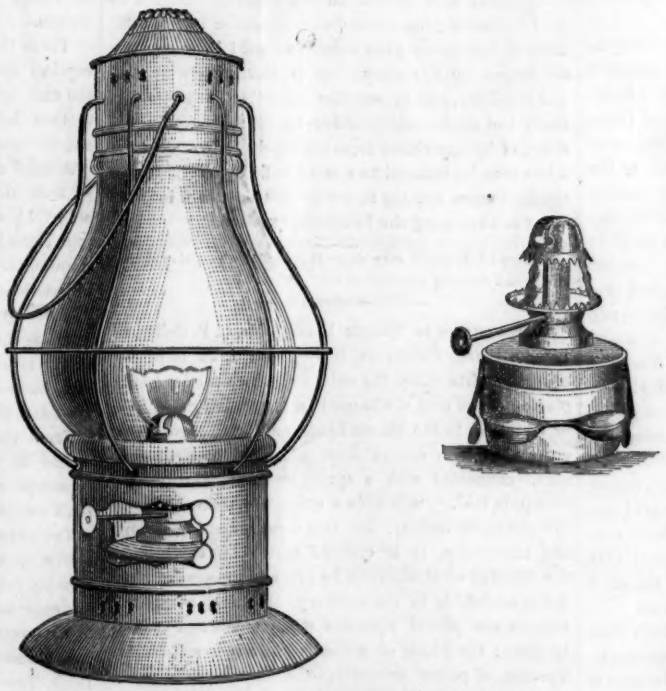
—In burning carbon to carbonic oxyd, a pound of oxygen generates only 2.952 units of heat; while in burning this carbonic oxyd into carbonic acid, a pound of oxygen generates 4.258 units of heat.

Smith's Improved Lantern.

The value of a good lantern for pedestrians and the various uses such articles are employed, is apparent to every one. It is necessary that the lantern shall be simple, durable, easy to open to fire and trim, and so arranged as to readily control the amount of light, and to light and extinguish it from the outside, without the necessity to open the lantern.

The accompanying illustration gives a clear representation of such a lantern. It will be seen that the burner requires no chimney, and a slide formed by a moveable band opens a space, through which the lamp can be lighted, and when closed the end or button of the ratchet to elevate the wick is outside the case, so as to easily turn the wick up or down, regulate the light or extinguish it if necessary.

The guards are so arranged as to dispense with soldering to the top of the trimming, and obviates the liability to melt off.



SMITH'S IMPROVED LANTERN.

An important feature in this lantern consists in having a *glass lamp* represented by itself, which facilitates filling without running over, which all opaque lamps are liable to. It also permits the light to pass through the bottom of the lantern to illuminate the pathway, without casting a shadow at the feet as all other lanterns do. The trade cannot fail to see the merits of this invention.

James O. Smith & Sons, 81 Fulton street, are the manufacturers of this and many other styles of lanterns and trimmings.

Bessemer Steel Rails.

It will be remembered that Mr. Moon stated at the last London and North Western meeting, in reply to a shareholder, that experiments were being made with a view to having rails with steel at the top and bottom of the rails, but iron in their body, which would effect a further economy in the use of steel rails. They would have that part of the rail exposed to wear, of steel, and that which is not subject to wear (for practically a rail is not worn down before a certain point) of iron. But this difficulty arose in carrying out the plan—the steel could not be thoroughly welded to the iron in the process of rolling, or so thoroughly that it would not loosen itself, when of course it was useless for train running. Success, however, has since attended the plan by adopting another method of connecting the steel with the iron. Instead of placing a plate of steel at the top and bottom of the pile to be rolled into a rail, there is now a connecting plate running down between the iron. The rail is steel above and steel below, with the body of iron. It answers, we understand, perfectly, and its importance to railway companies may be estimated when we say that steel rails of this make will cost only £9 10s to £10 per ton, or but £2 more than iron. Great economy will therefore be effected in the future working of railways with large traffics, where good iron rails used to be worn or knocked out in three or four months. Extending the life of the rail, as the steel rail does greatly, also means economy in the consumption of coal, and should be another warning to the croakers.—*Herapath's Journal.*

The Process of Roasting Ores.

Translated from the German of F. Plattner, for the MINING & PETROLEUM STANDARD AND AM. GAS-LIGHT JOURNAL, by

J. H. TIEMANN.

[Entered according to an Act of Congress, in the year 1866, by Bryant, Callender & Co., in the Clerks Office of the District Court of the United States, for the Southern District of New-York.]

NUMBER XIII.

Although it is generally supposed that sulphate of silver at a high temperature, decomposes to metallic silver, having first smelted, and evolving sulphurous acid and oxygen, and in consequence thereof it might be supposed that when there is a loss of silver, it has been oxidized by the incoming air, yet in roasting in a large way, besides the circumstance that the oxyd of silver formed at a high temperature gives off its oxygen again only at a lower temperature, there is still another circumstance, namely, that the oxyd of silver is more or less inclined to unite with other substances at a high temperature. Supposing we had an argentiferous ore, roasted so far that the silver disseminated through the mass has been converted into a sulphate in the finest state of division, and the heat is increased sufficiently to decompose the sulphate, it would not be entirely converted into metallic silver at such a temperature, but would be partly reduced to an oxyd. If this oxyd were in contact with other metallic oxyds, or earthy substances (quartz, silicates,) with which it is inclined to unite (like cobalt with oxyd of zinc, alumina, etc.,) it would not give off its oxygen when the temperature is lowered, but would remain in combination with these substances as an oxyd. Not only do the glass tubes in the three last experiments show this, but it may be directly proven by taking a mixture of sulphate of silver and any fireproof oxyd (oxyd of copper, or lead, sesquioxyd of iron, etc.), or finely pulverized quartz, making it as 1 to 10 by weight, and heating it in a muffel till all the sulphate of silver has been decomposed, and then testing the remaining generally porous mass. When treated with boiling water, if the sulphate has been completely decomposed, nothing will be dissolved; if it is then dried and gently warmed with concentrated nitric acid, less fumes of hyponitric acid are evolved than when a like quantity of metallic silver is treated with nitric acid.

In regard to the volatility of oxyd of silver, the question arises, does the oxyd actually possess the property of becoming volatile without the aid of another body, or does it first require such aid? Malaguti and Durocher give it as their opinion that the volatilization of the silver (metallic) is favored by vapors; but as the experiments which they made with partially roasted zincblende in retorts, fail to prove this in so far, that the loss in weight of the whole mass was very small in proportion to the amount of sublimed silver, it would appear as if the volatilization had been a chemical process. If we suppose either that the silver in the blende was present as a sulphate, or that it was first changed to a sulphate by the escaping sulphuric acid from the sulphate of zinc set free in heating the roasted blende, but that in either case it was gradually decomposed, then it is probable that oxyd of silver was liberated and became volatile, causing a sublimation of metallic silver on the upper and colder part of the retort, where it gave off its oxygen. That the sulphurous acid gas and oxygen liberated at the same time, may have conduced to the volatilization, is not to be doubted; that alone, however, would not have caused it, if the oxyd of silver itself had not been inclined to volatilize.

That oxyd of silver is really volatile at a high temperature, may be seen from the foregoing experiments, especially in those where the pulverized mixtures of metallic silver with oxyd of silver and quartz were exposed to the action of oxygen at a red heat. Had the oxyd of silver not been volatile in itself, but merely carried off mechanically by the slight draught, it would not have caused the formation of the circular metallic mirror in the tube after having given off its oxygen, and fine particles of zinc or quartz would have been likewise carried over, which they were not. But that the slight draught aided the volatilization is seen by the grayish white deposit of metallic silver on the tube, several inches from the mixture.

From these results we may presume that when argentiferous ores or mill products are roasted in the large way, the percentage of loss increases, the higher the temperature the more porous the mass becomes, and the less the oxyd of silver enters into combination with other bodies. This is proven in so far, that we know for a certainty that the air which impregnates the ore on the hearth in passing off, after having been deprived of its oxygen, materially assists in volatilizing the oxyd of silver formed either from the sulphate, or from the metallic silver in the ore.

Deportment of gold when auriferous sulphurets are subjected to an oxidizing roasting—loss of gold.

If the sulphur or arsenical metals or mill products contain gold and silver, or gold alone, it separates in the metallic state, while the other metals either change to free oxides, sulphates, or arsenates, the gold is in an infinitely finely divided state, and at a roasting temperature, neither the oxygen of the incoming air, nor the sulphuric acid set free have any effect on it.

It having been said that experience has shown gold to possess the same properties as silver in regard to volatilization, in many places where auriferous ores and mill products are roasted in a large way, showing a great loss of gold, which, according to V. Tscheffkin, may even reach 100 per cent., I made several experiments to test this, in the same manner as in determining the loss of silver. I have roasted gold in a fine state of subdivision (precipitated from solution by sulphate of iron,) as well as rich auriferous compounds of sulphur and arsenical metals, with ores and other substances free from gold, a shorter and longer time, and at a high and low temperature, and have found that a loss of gold can only occur when the roasting is very energetic, and the gaseous products carry off the finely divided gold mechanically.

Winkler also found by experiment that the loss of gold was very slight in roasting auriferous mixtures.

In cases where a loss of gold is believed to have occurred, may it not be attributed to a wrong estimate in the determination, or to a false average of the ore?

Aidarow, in a treatise on the non-volatilization of gold in roasting iron matte, calls attention to the difficulty of determining the amount of gold in auriferous substances by fire assay, that is scorifying with lead and cupelling, and proves that a portion of the gold is easily lost mechanically, either by adhering to the scorifier, or by absorbtion from the cupel. Although such a loss may be reduced to a mere trifle by avoiding the circumstances causing it, yet it must be taken into account in answering the foregoing question.

[Editors of Journals may copy these articles by giving proper credit, and marking the same as copyrighted. EDS.]

IMPROVEMENTS IN QUARTZ MILLS.—Mr. C. P. Colby, of Lancha Plana, California, has patented an improvement in quartz mills, the nature of which relates to the placing of the cam shafts used in stamp batteries, lower or nearer to the stamp heads, and attaching to them eccentrics, with collars from which extend upright rods, connected with a spring so arranged that the stamp, in falling, will give a quick percussive blow to the ore in the battery. By this arrangement of stamps and machinery, it is claimed that about three times the number of strokes can be given to the pestles, over those attainable in the ordinary batteries, where the tappets are placed upon the stamp stems and worked by cams; the whole of which is operated without an increase of power proportioned to that required to obtain the same work in the ordinary manner. A simple and convenient set screw arrangement is also introduced, by which the stamps may be readily elevated and held at a uniform height for cleaning out the battery.—*Alpine Miner.*

—CAUTION!—Tomatoes placed upon a newly painted shelf to ripen will take up the lead in such a force as to make it poisonous. This should be remembered.

On the Future Water Supply of London.

[From the London Journal of Gas Lighting and Water Supply.]

BY GEORGE WILLOUGHBY HEMANS, C. E., AND RICHARD HASSARD, C. E.

In a precipitous hill and rocky district, such as this is, the loss from evaporation and absorption will be small, probably not more than 12 inches; we take it, however, at 14 inches, leaving 66 inches as the minimum depth of available rain during a continuous period of dry seasons.

This would be equivalent to a supply of 464,719,562 gallons daily throughout the year, and is a quantity much larger than required, or indeed than could be conveniently dealt with.

It is proposed, therefore, to limit the supply from this district to 240 million gallons daily, and to give as compensation a quantity nearly equivalent to one-third of the abstracted rain—viz., 450,000 gallons daily for each square mile of drainage area.

By such an arrangement, the floods now running to waste would be to a great extent controlled, and the dry weather yield of the district probably doubled in volume.

It will be evident that the district is capable of supplying a far larger quantity of water than that which it is proposed to take from it; in fact the main cost of the project would be incurred, not in collecting and impounding the water, but in conveying it from its native district to the place of consumption.

The descriptive particulars of the project are as follows, and will be best understood by reference to the map:

The districts from which water is proposed to be taken, with two small exceptions, lie on the northern slopes of the range of hills towering over Grasmere, Windermere, and Kendel, and draining into the rivers Lowther, and Greta, and into the lakes of Haweswater, Ullswater and Thirlmere.

On the eastern side of the collecting ground the works would commence on the river Lowther, at Cooper's Green, in Sleddale, by an intercepting conduit, passing from thence round the hills to Swindale, where the first auxiliary reservoir would be constructed, and on to Haweswater, the surface of which would be raised 42 feet, or to 736 feet above the Ordnance datum.

From the north end of Haweswater another intercepting conduit would be constructed, passing round the eastern slopes of Bampton Common, and conveying to that lake the waters of the Hows Beck, Gill Beck, and Heltondale Beck streams.

A third conduit or water-course would be constructed from the river Lowther, commencing at a point about 1¼ mile below the village of Askham, passing round the hill to the west of Clifton, along the eastern slope of the valley of the river Eamont, and terminating at the north end of Ullswater, into which lake and into the river Eamont it would deliver at Pooley bridge.

These three conduits would intercept all the waters of the river Lowther and its tributaries above Clifton, and conduct them into the Swindale auxiliary reser voir, and into the Haweswater and Ullswater lakes.

From the northwestern end of Ullswater a conduit would be constructed to Dacre Bridge, which would intercept and conduct into it the waters of the Dacre Beck and its tributaries.

Thirlmere would be raised 64 feet, or to 507 feet above the Ordnance datum, and from its northern extremity conduits or catch water drains would be constructed in easterly and westerly directions; the first named would pass round the northern slopes of Matterdale Common, and intercept the waters of the Mosedale Beck, Trout Beck, and Barrow Beck streams, and complete a zone of intercepting conduit and water-course between the northern extremities of Ullswater and Thirlmere lakes.

The other conduit or catch-water drain would pass round Bleaberry Fell, and along the edge of the table land east of Watendlath, and extending up to the Blea Tarn would intercept all the upper waters of the Oatendlath, and Coldbarrow Fells.

By constructing a tunnel from the south end of Thirlmere, under Dunmail Caise Pass, and some short intercepting conduits from its southern extremity, the waters of about six square miles of a very wet district on the southern face of the hills may be conducted to and impounded in that lake.

When Thirlmere is full, or the streams in flood, the waters may be passed into a reservoir to be constructed on St. John's Beck, immediately below that lake, where they would be impounded and given out as compensation to the mill owners on the river Greta, at and above Kerwick; when both are full, the surplus waters may be passed into Ullswater, which, with the auxiliary reservoirs to be constructed in Martindale, would, in conjunction with Thirlmere, be used for towns supply only.

The waters of the river Lowther, although of admirable quality, are the least desirable in the scale of excellence, and it is proposed to use them mostly for compensation, passing them in the first instance down the river Lowther itself to a point 1½ mile below Askham, from whence they would be conveyed by a new channel to Pooley Bridge, and there delivered into the river Eamont.

The water supplied to London and the intervening towns would be taken almost entirely from Ullswater and Thirlmere lakes, and would be of extraordinary purity and excellence, being under two degrees of hardness, and containing, per imperial gallon, not more than about four grains of total impurity, of which scarcely more than half a grain would be organic matter.

Haweswater and Thirlmere are lonely and unfre quented lakes, occupying deep valleys, embosomed in mountains, and afford admirable sites for the construction, at comparatively trifling expense, of immense reservoirs, to which additional supplies of water can with great facility be conducted.

The particulars of the reservoir would be as follows:

Name.	Area of collecting ground in square miles.	Area of reservoir in Acres.	Content in cubic feet. For supply to towns.	Content in cubic feet. For compensation.	Total Storage.
Swindale.....	38	166	.....	187,000,000	187,000,000
Haweswater....		683	235,200,000	961,100,000	1,196,300,000
Martindale.....	95	255	336,000,000	.....	336,000,000
Ullswater.....		2,300	1,742,400,000	.....	1,742,400,000
Thirlmere.....	* 44	875	1,721,977,600	.....	1,721,977,600
St. John's Beck Reservoir...		360	....	380,000,000	380,000,000
	177	4,639	4,035,557,600	1,528,100,000	5,563,677,600

equal to 120 days supply at 250 million gallons per day, and to 157 days supply at 200 million gallons per day—after giving credit for the average minimum summer yield, which will not be less than 40 million gallons per day—and to 120 days compensation at 450,000 gallons per square mile of drainage-area; this will more than suffice in a district of such constant rain.

(To be continued.)

* If thought desirable, the waters from a further area of about eight square miles draining into the Airy Beck and Dacre Beck, and now flowing into Ullswater, can easily be diverted and conveyed to Thirlmere.

—A single lode in Nevada is turning out more silver and gold annually than did the fa rous mines of Potosi in their palmiest days, and which at one time built up a city of 160,000 inhabitants.

To Whom the Origination of the Venango Petroleum Discovery is Due.

I am not prepared to say, without further investigation, that it would be desirable for the company to manufacture this product in a pure state, fit for producing candles (a somewhat elaborate chemical process), but I may add that should it be desirable to do so, the quantity of this substance produced may probably be very largely increased by means which it is now unnecessary to mention.

Paraffine derives its name from the unalterable name of the substance, under the most powerful chemical agents. It is white, in brilliant scales of a greasy luster; it melts at about 116°, and boils at over 700° Fah.; it dissolves in boiling alcohol and ether, and burns in the air with a brilliant flame. Associated with paraffine are portions of a very volatile oil, eupione, which boils at a lower temperature, and by its presence renders the boiling point of the mixture difficult to determine. I consider this point worthy of further examination than I have been able at present to give it, i. e., whether the last third, and possibly the last half, of the Petroleum may not be advantageously so treated as to produce from it the largest amount of paraffine which it is able to produce.

The result of this graduated distillation, at a high temperature, is that we have obtained over 90 per cent. of the whole crude product in a series of oils, having valuable properties, although not all equally fitted for illumination and lubrication.

A second distillation of a portion of the product which came over in the latter stages of the process (a portion distilled at about 650° Fah., and having a high color), gave us a thin oil of density about 7.50, of light yellow color and faint odor.

It is safe to add that, by the original distillation, about 50 per cent. of the crude oil is obtained in a state fit for use as an illuminator, without further preparation than simple clarification, by boiling a short time with fair water.

DISTILLATION BY HIGH STEAM.

Bearing in mind that by aid of high steam at an elevated temperature, many distillations in the arts are effected which cannot be so well accomplished by dry heat, I thought to apply this method in case of the present research. Instances of this mode of distillation are in the new process for Stearine candles, and in the preparation of rosin oil. I accordingly arranged my retort in such a manner that I could admit a jet of high steam into the boiler, and almost at the bottom of the contained Petroleum. I was, however, unable to command a jet of steam above 275 to 290° Fah., and although this produced an abundant distillation, it did not effect a separation of the several products, and the fluid distilled had much the same appearance as the Petroleum itself, thick and turbid. As this trial was made late in the investigation, I have been unable to give it a satisfactory issue, chiefly for want of steam of a proper temperature. But I suggest, for the consideration of the company, the propriety of availing themselves of the experience already existing on this subject, and particularly those who are concerned in the distillation of rosin oil—a product having many analogies with Petroleum in respect to its manufacture.

USE OF THE NAPHTHA FOR ILLUMINATION.

Many fruitless experiments have been made in the course of this investigation which it is needless to recount. I will, therefore, only state the results which are of value.

1. I have found that the only lamp in which this oil can be successfully burned is the Camphene lamp, or one having a button to form the flame, and an external cone to direct the current of air, as is now used in all lamps designed to burn either camphene, rosin oil, sylvic oil, or any other similar product.

2. As the distilled products of Petroleum are nearly or quite insoluble in alcohol, burning fluid (i. e., a solution of the oil in alcohol) cannot be manufactured from it.

3. As a consequence, the oil cannot be burned in a hand-lamp, since, with an unprotected wick, it smokes badly. Neither can it be burned in a Carcel's mechanical lamp, because a portion of the oil being more volatile than the rest, rises in vapor on the elevated wick required in that lamp, and so causes it to smoke.

I have found all the products of distillation from the copper still capable of burning well in the camphene lamp, except the last third or fourth part (i. e., that portion which came off at 700° F. and rising, and which was thick with paraffin). Freed from acidity by boiling on water, the oils of this distillation burned for 12 hours without injuriously coating the wick, and without smoke. The wick may be elevated considerably above the level required for camphene without any danger of smoking, and the oil shows no signs of crusting the wick tubes with a coating of resin, such as happens in the case with camphene, and occasions so much inconvenience. The light from the rectified naphtha, is pure and white without odor. The rate of consumption is less than half that of camphene, or rosin oil. The imperial pint, of 20 fluid ounces, was employed—a gallon contains 160 such ounces. A camphene lamp, with a wick one inch thick, consumed of rectified napththa, in one hour, 1¾ ounces of fluid. Carcel's mechanical lamp of ¾ inch wick, consumed of best sperm oil, per hour, 2 ounces. A "Diamond Light" lamp, with "sylvic oil," and a wick 1½ inch diameter, consumed, per hous, 4 ounces.

I have submitted the lamp burning Petroleum to the inspection of the most experienced lampists who were accessible to me, and their testimony was, that the lamp burning this fluid gave as much light as any they had seen, that the oil spent more economically, and the uniformity of the light was greater than in camphene, burning for 12 hours without a sensible diminution, and without smoke. I was, however, anxious to test the amount of light given more accurately than could be done by a comparison of opinion. With your approbation I proceeded, therefore, to have constructed a *photometer*, or apparatus for the measurement of light, upon an improved plan. Messrs. Gunow, scientific artists of this city, undertook to construct this apparatus, and have done so to my entire satisfaction. This apparatus I shall describe elsewhere—its results only are interesting here. By its means I have brought the Petroleum light into rigid comparison with the most important means of artificial illumination. Let us briefly recapitulate the results of these

PHOTOMETRIC EXPERIMENTS.

The *unit* adopted for comparison of intensities of illumination is Judd's Patent Sixes Sperm Candle.

The sperm oil used was from Edward Mott Robinson, of New Bedford—the best winter sperm remaining fluid at 32° Fah. The Colza oil and Carcel's lamps were furnished by Dardonville, lampist, Broadway, New York.

The Gas used was that of the New Haven Gas-Light Company, made from best Newcastle coal, and of fair average quality.

(To be continued.)

Brevities.

—The bells of the Paris ornamental clocks are composed 72 parts by weight, copper; 26.56 tin, 1.44 iron.

—At a white heat all magnetism disappears; it is still sensible in iron when heated to a dark red glow.

—Papier mache is now used for molds for sugar refining, also in making casts for stereotyping.

—The copper product of the world is 90,000 tons a year, 48,000 tons of which is produced in Chile.

—It has been estimated that a ton and a half of water falling one foot per minute, will grind and dress a bushel of wheat per hour.

—The divisibility of copper is so great that a grain of it dissolved in an alkali will give a sensible color to 500,000 times its weight in water.

—By using delicate gold electroscopes, indications of statical electricity have been obtained from living blood, nerve, tissues and muscular fibre.

—A pneumatic tube, like the one at work in London, is being laid down in Paris, for the conveyance of letters and packages between the Grand Hotel and the Bourse.

On the Combustion of Gas for Economic Purposes.

A Lecture delivered before the British Association of Gas Managers.

By Dr. Letheby.

(From the London Chemical News, No. 341.)
(Reprinted at Philadelphia in the Journal of the Franklin Institute.)

The temperature of different combustibles is shown in the diagram below, and you will notice that the highest temperatures produced by the various constituents of coal gas is that of acetylene, or the vapor of benzole, when burned in oxygen, the heat of which exceeds 17,000° Fah. The lowest temperature of all the constituents is about 12,700° Fah., the temperature of burning carbonic oxide.

On the same diagram I have tabulated the thermometic power of a great number of substances. It is expressed in the number of pounds of water raised 1° Fah. by a pound of the substance, and when the body is capable of being converted into gas or vapor, I have also expressed it in the cubic foot at common temperature and pressures. Hydrogen, you perceive, is the most powerful thermetic agent, and carbonic oxide is the weakest. A pound of the first of these gases will raise 62,030 lbs. of water 1°, whereas a pound of the latter will only heat about 4325 lbs. of water to that extent. Examined by the cubic foot, and considering that for every pound of water raised 1°, about 48 cubic feet of air was raised to the same extent, we may say the chief constituents of coal gas have this thermometic power—

Pounds of Water and Cubic Feet of Air raised 1° Fah. by a Cubic Foot of the Gas burning in Air.

Cubic Foot of		Lbs. water raised 1° Fahr.	Cub. Air raised 1° Fahr.
Hydrogen	heats	329	15,837
Marsh gas	"	996	47,946
Olefiant gas	"	1585	76,229
Propylene	"	2376	114,378
Butylene	"	3168	152,502
Acetylene	"	1251	60,220
Benzole vapor	"	3860	185,814
Carbonic oxide gas	"	320	15,403
Common coal gas	"	650	31,290
Cannel coal gas	"	760	36,585

From this we can determine the practical thermometic power of any of these agents. A cubic foot of common gas will heat 65 gallons of water 1°, or 6.5 gallons 10°, or 3.25 gallons 20°; so that a bath containing 250 gallons of water would require about 77 cubic feet of common gas, or 66 of cannel, to raise its temperature from 55° to 75°. In practice, however, this is rarely attained because of the faulty construction of the heating apparatus. I find, indeed, that a bath in my own house, made by Phillips, of Skinner street, takes nearly twice this proportion of gas to heat it, and being in a closed room the atmosphere is almost poisoned before the bath is ready; and the circulation of the hot water is so imperfect that the top layer becomes boiling hot before the bottom of the water is warm. This is a subject which requires attention, for it is open to much improvement.

Again, with regard to the boiling power of gas, although in good practice a cubic foot of gas should boil off about 4713 grains of water, or about 22 times its own weight, yet this is not often attained, for in an open vessel we rarely evaporate more than 2866 grains of water, or about 13 times its weight.

But the heat of the burning gas is more surely applied to the warming of rooms; for, as you will see by the table, a cubic foot of common gas will heat an apartment containing 3129 cubic feet of air 10°, and the same quantity of cannel gas will heat 3658 cubic feet to the same extent. Other illuminatiag agents will, however, light for light, heat the atmosphere, and vitiate it to a larger extent. This is seen in the table which I brought under your notice at the last lecture.

(To be continued.)

Table of the Cumbustion, Temperature and Explosive Power of Gases.

	Per Lb. substance.			Pounds of water heated 1° Fah.			Temperature of cumbustion.				Explosive power.		Mechanical pow'r per lb.
	Ox. used.	Co^2 produced	Air vitiated.	Per Lb. substance.	Fer cu. ft. substance.	Per lb, ox. used.	Open flame.		Closed vessel.		With ox	With air.	Tons raised 1 foot high.
							With ox	With air.	With ox.	With air.			
	Cub. ft.	Cub. ft.	Cub. ft.	Lbs.	Lbs.	Lbs.	Deg.	Deg.	Deg.	Deg.	At.	At.	Tons.
Hydrogen	93.4	0.0	467	62030	329	7754	14510	5744	19035	7852	25.6	12.5	21390
Marsh gas	47.2	23.6	826	28513	996	5878	14130	4762	18351	6680	37.0	14.0	8408
Olefiant gas	40.5	27.0	878	21344	1385	6225	16535	5217	21344	7200	42.9	15.1	7360
Propylene	40.5	27.0	878	21327	2376	6220	16522	5239	21327	7177	67.3	22.5	7360
Butylene	40.5	27.0	878	21327	3168	6220	16522	5232	21327	7177	85.8	30.2	7360
Acetylene	36 3	29.1	909	18197	1251	5914	17146	5142	22006	7009	37.9	17.6	6275
Benzole	36.3	29.1	909	18197	3860	5915	17146	5142	22006	7009	113.7	52.8	6275
Carbonic oxide	6.7	13.5	371	4325	320	7569	12719	5358	16173	7225	21.8	11.7	1490
Bisulph Carbon	14.9	5 0	689	6120	1239	4845	15280	4314	20031	5917	30.2	11.6	2110
Sulp. hydrogen	16.7	0.0	630	7444	671	5271	13688	4388	17542	6026	28.3	12.7	2567
Cyanogen	14.5	14.5	435	6712	925	5142	13488	5028	17645	6167	35 6	17.8	2314
Common coal gas	37.5	17.6	618	21060	650	6816	14320	5228	18101	7001	29.2	14.6	7262
Cannel gas	31.0	22.0	698	20140	760	5503	14826	5121	19045	7186	38.8	18.0	6945
Wood spirit	25.3	11.8	422	9547	818	6363	11435	4641	14902	6347	40.3	15.3	3290
Alcohol	24.6	16.4	533	12929	1597	6195	13305	4831	17223	6690	49.4	16 2	4455
Ether	30.9	20.4	664	16249	3217	6158	14874	5150	19225	6953	58.6	19.0	5603
Camphene	38.9	27.8	880	19573	7134	6088	16271	5026	20953	6922	47.6	16.0	6750
Spermacetti	37.0	25.2	815	17589	....	4995	14599	4413	....	....	....	....	6055
Wax	37.7	25.6	829	18809	....	6061	12921	4122	....	....	....	....	5451
Stearic acid	34.6	24.0	733	17050	....	6143	15885	4818	....	....	....	....	5880
Stearine	34.4	14.2	527	18001	....	6143	15815	5095	....	....	....	....	6207
Paraffin	40.5	27.0	878	21327	....	6220	16522	5239	....	....	....	....	7354
Paraffin oil	40.5	27.0	878	21327	....	6220	16522	5239	....	....	....	....	7354
Rape oil	38.7	24.3	801	17752	...	6123	15830	5087	....	....	....	....	6121
Sperm oil	38.7	24.3	801	17230	....	6088	15863	4937	....	....	....	....	5941
Carbon	31.0	31.5	943	14544	....	5447	18329	3026	....	....	....	....	5015

The Oil Trade of Canada.

The oil wells of Canada are now capable of producing about 500,000 barrels of petroleum annually, and new wells are still going down. The only demand as yet is for home consumption. The sales of Petrolia and Bothwell during the year ending September 1, 1866, amounted to 77,000 barrels. The entire demand for Canadian consumption cannot exceed 250,000 barrels, or 50 per cent. of the entire product of the wells now in operation. None of them are working to their fullest capacity, under these discouraging circumstances, and the prospect is that many will be obliged to suspend altogether.

It cannot be that a valuable produce, for which there is a sure and steady market in Europe, will long be kept out of that market. The Bothwell oil yields 75, the Petrolia oil 66 2-3, and the Pennsylvania oil only 60 per cent. of refined oil. It is furthermore claimed that the Canadian illuminating oil will last one-fifth longer than the Pennsylvania article. These advantages must ultimately tell in its favor. In addition to its uses for illumination and lubrication, the opinion prevails in some quarters that it will become available as an article of food. This, we are told, is the opinion of Professor Brackett, of Bowdoin College, and if the theory is correct, that the oil is derived from an enormous deposit of shell fish, it is not perhaps so improbable as would at first appear, that petroleum may contain nutriment. The demand for established uses, however, is active enough to insure a movement sooner or later. The oil is wanted, and will not be allowed to remain in Canada.

One cargo of crude oil was sent abroad a few years ago. It was the first attempt to establish a foreign trade, and has not been followed up. Prices have dwindled to $2.50 or $3 at Bothwell, and $1.25 to $1.75 at Petrolia in gold. A steady demand at $3 a barrel in Bothwell and $2 or $2 25 in Petrolia, would set all the pumps at work. Such a demand is sure to make itself felt sooner or later. The St. Lawrence will not afford an outlet for this new trade. It must all pass through New York or Portland, and Portland merchants ought to be on the lookout for it. The crude oil would probably be brought in iron tanks to this city. It would then be transferred to casks for shipment. This business would naturally fall to us here, and ought by all means, when the time comes, to be secured for Portland.—*Portland Daily Press.*

The American Cent.—The first copper cent was proposed in 1782 by Robert Morris, the great financier of the Revolution, and was named by Jefferson, two years later. It began to make its appearance from the mint in 1792. It then bore the head of Washington on one side, and a chain of thirteen links on the other. The French Revolution soon after created a rage for French ideas in America, which put on the cent, instead of the head of Washington, the head of the Goddess of Liberty—a French liberty, with neck thrust forward and flowing locks. The chain on the reverse was replaced by the olive wreath of peace. But the French liberty was short-lived, and so was her portrait on our cent. In its stead, a staid, classic dame, with finely chiseled Grecian features, and a fillet round her hair, and continued until about two years since, when the much smaller and more convenient nickel cent appeared, with a flying eagle in the place of Liberty's head, in order that it might not be mistaken for the five dollar gold piece. In the present new cent the liberty head has been restored.

—A body projected from the lunar surface with a velocity of about 7,770 feet per second, would be detached from the moon, and brought to the earth by terrestrial gravitation.

Correspondence.

MADISON, N. J., Feb. 16, 1867.

EDITORS GAS-LIGHT AND MINING JOURNAL:

From the San Francisco Cal. *Bulletin* of Jan. 16, 1867, I observed an article on the quality of mineral ores recently discovered there, and known as the Talcose slate, and the results of working by stamp mill process, yielding at the rate of $5 per ton. This seems to be a very recent discovery in the California mines, and would seem to be creating some excitement, as you will see by the accompanying report.

This class of ores I found on examination of the gold quartz mines in the State of Vermont, near Plymouth and Bridgewater, and seem to be very generally diffused through all the different ledges of that mining district, especially at the Quartz Hill, Pioneer, and Vermont mines, and from its soft appearance, as described in the California report, shows that it can be much cheaper and more successfully worked than the more hard and general gold quartz from the Gold Hill mine in Bridgewater. Quite a number of tons of this Talcose slate ore was worked in 1865, and yielded $11 per ton, and the mill was new and just erected, and of course not to be supposed to be of the most improved style of machinery for saving gold as the California mill, Savage. Deposits of this Talcose slate are even now in sight in those mines at Bridgewater, that are now open, and if the California yield of $5 per ton can be made profitable, these, as you will readily see can, in mills of large capacity, as the ore can be mined and milled for $2 per ton. A new impetus must be given to the working of the Vermont mines, as labor and all other expenses attending mining and milling are much cheaper than in the Pacific States, and the result must be much more satisfactory, as this class of ore largely predominates. It is really encouraging to see an interest taken in this class of ores as there is such a vast field for enterprise and sound investment in the same. Recent accounts frum the mineral fields of Vermont are highly encouraging, and many investments are steadily being made, new mines being opened, and bright anticipations are held for renewed activity in working and improvements, and mill building early in this coming spring. O. P. Q.

ANNUAL MINING REVIEW FOR 1866.

FURTHER OF THE MINES AND MINERAL RESOURCES OF THE PACIFIC COAST.

GOLD-BEARING TALCOSE SLATES.

Within the past few years, a species of auriferous deposit, new alike to our miners and men of science, has been discovered at various points in this State, and which it is difficult to classify, having been worked both as placer diggings, and after the manner of quartz. As it is now being generally milled, however, and otherwise treated like gold-bearing quartz, it would seem to properly fall under this head of the business. These deposits, which consist of a conglomeration of minerals and metals, were discovered during the copper excitement that prevailed some three years ago, leading to much exploration of the cupriferous belt that stretches along the lower foothills of the Sierra, lying to the west of the main gold range of the State. The first of them noticed, situate near the town of Lincoln, Placer county, had been located as a copper claim, the rock being highly colored by the carbonate of that metal. On opening it, however, the entire mass, composed of broken quartz, talcose slate, ocherous matter, iron and copper, was found so charged with gold that a five-stamp mill was erected, and it has since been worked for this metal alone. Taken altogether and worked by an evidently wasteful mode it has yielded at the rate of about $5 per ton, which amount it is thought can be largely increased by a more careful style of working. This mill has run through its batteries about 35 tons of this material in 24 hours, being at the rate of seven tons per stamp, or eight times the quantity of quartz that could have been crushed in the same period. The deposit at this place is about 500 feet long by 300 wide, and rises 100 feet above the plain, its extent downward reaching, as has been ascertained, to the line of permanent water, where it is presumed, the slates and sulphurets, protected from atmospheric action, will be found compact and indurated, as usual, rendering their pulverization a matter of great difficulty, if, indeed, they do not at this point cease to be auriferous and run into copper, a theory held by some. But even if this should happen, these copper veins might be pursued with profit, while the great quantities of this auriferous material found above the level of constant water would render it an important addition to our mineral resources on account of the facility with which the gold can be extracted therefrom; the cost of mining and milling this substance being, at Lincoln, less than $2 per ton. This mine, however, is now worked as a quarry by means of an excavation open to the air; when greater depths are reached it will, of course, cost more to extract the ore, and, possibly, it may gradually lose its soft and porous character, rendering the operation of crushing also more expensive. But subject to such conditions and contingencies, these discoveries are still of great practical value.

The other localities at which these deposits clearly defined have been met with, are Quail Hill, Calvaras county, near Jackson, and at several other points in Amador county, and elsewhere along the copper bearing belt of the State. At Quail Hill the bed of talcose slate mixed with ocherous clay, copper iron pyrites and broken quartz, there being no regular vein of this rock, the whole stained with the oxides and carbonates of these metals, covers an area of about 1,000 by 200 feet, with a depth to constant water of 180 feet. It contains much free gold, and has been worked by sluice washing for several years with good profit. Tested by mill process, portions of this substance has been found to yield well, giving an average of over $30 in gold, with a considerable percentage of silver to the ton. The mine near Jackson, worked for the past two years by battery, has yielded about $8 per ton, with ten per cent. of sulphurets, worth from $150 to $200 per ton. Several other claims of a similar kind have lately been opened in the same neighborhood, and are likely to prove valuable. One half of the claim near Lincoln having been purchased by parties in this city, a forty-stamp mill has since been erected near the spot, and is now about ready for operations. With the improvements introduced by this Company they expect to work a large amount of this material, and to reduce it at rates even lower than heretofore. A mass of these agglomerated metals having been discovered at Sander's Ranch, also in Placer county, and afterwards sold to a New York Company, the latter have since erected thereon a ten-stamp mill, which is now in successful operation. A number of other mills some of them of large capacity, are now being built, with others projected, for working this material at different points in the region extending from Tuolumne to Nevada county, and it may justly be expected that this new interest will be rapidly advanced to a prominent place in this branch of mining.

Miscellaneous Items.

—The largest railroad depot in the world has recently been built at Cleveland, Ohio. It is 603 feet in length by 180 in breadth, and covers an area of more than two and a half acres. The building is one of considerable architectural beauty. The front is ornamented with marble busts of Lincoln, Grant, and other men of note.

—The third rail in the Great Western Railway has been completed, and thus direct communication without change of cars with the Atlantic seaboard, and a point 370 miles west of Chicago, established. An excursion from Detroit to Chicago to celebrate the event passed over the road.

—Mr. A. Hayward, of California, who has been appointed one of the California Commissioners to the Paris Exposition, has prepared a block of quartz from his own well-known mine in Amador, which he will take with him. It is from a depth of 1,250 feet, and weighs seventy-seven pounds.

—If an iron wire be twisted during or even after the passage of a voltaic current through it, the wire becomes magnetic. When the wire is twisted in the manner of a right-handed screw, the point at which the current enters becomes a south pole; in the opposite case it becomes a north pole. If, during the passage of the current, the wire be twisted in different directions, the polarity changes with the direction of the twist.

—A system of telegraphing is now in operation in France, by which exact copies of the original messages are produced at the terminus of the lines, solely by mechanical means. The telegram is written on paper coated with a lead-colored, non-conducting surface. The ink employed changes every point touched by it to the opposite electrical character. Two pendulums at either end of the circuit swing in unison; the upper end of each is divided into many points. By this contrivance, the message being passed over these at one end, a current to correspond with the writing is sent, and a *fac simile* copy, on prepared paper held to the vibrating pendulum, is produced at the other extremity.

A Wonderful Cement for Iron.

On previous occasions we have described the remarkable preservative qualities of the Zepipe composition on stone and brick, and the extraordinary effects which the application of one part of the process has upon paper, converting it into a substance harder and more enduring than oak, and capable of being substituted for metals in any of the uses to which they are applied in the arts and manufactures. Following out the line of investigation into the chemical constituents of the substance which he employs, Colonel Szerlemy, the inventor, has now succeeded in producing some results, which, if they had not been shown under our inspection, we should have hesitated to believe possible. By combining various substances which may be readily obtained in large quantities, and at almost nominal prices, the ingenious inventor has made what he calls this "iron cement," and truly it is an iron cement. It is a cement which, easily applied, becomes in a few minutes as hard as iron, and, so far as we are aware, this is a quality not possessed by any other substance—that of perfect and complete cohesion to iron. At the factory at Battersea, we saw two large plates of iron held together so firmly as to defy all attempts at separating them. The plates had, in several parts, been fractured by the attempt to separate the two surfaces, but they still remained firm and immovable. Two plates of iron were cemented together in such a manner as that the lower one could have suspended to it the weight of several tons; the projecting corners of the lower plates to which the weights were attached were bent and curved, and the upper and lower plates had "buckled," but they still remained held together by the thin layer of iron cement as though they were but one plate. By the side of this a plate was made up of alternate thin sheets of iron and planks of timber, and the wood and the iron adhered as firmly as in the case when iron surfaces only were exposed to the action of the cement. A third test consisted of thin sheets of iron with alternate layers of paper which had been previously coated with another kind of composition of M. De Szerlemy's. There the same wonderful cohesion existed. A sheet of glass was fixed to the edge of an iron by this extraordinary cement, and was as firmly held as the iron or wood, or prepared paper of the previous experiments with iron and wood. Many other equally curious and startling experiments were shown and amongst these, a novelty in the way of a house some forty feet in length, the sides, flooring and roofing of which were entirely of paper. The exhibition is certainly a most instructive one.—*London Exchange.*

Oil Filter.

Among the many patents taken out in the United States the one for filtering Lubricating Oil, described in the *American Artisan* as follows, may be of some interest to our readers: "In filtering oils, more particularly those required for lubricating purposes, and especially petroleum as pumped from a well, it is important, but has heretofore been a difficult matter to accomplish, that the oil should be freed from all grit, sand, and other earthy matter held in suspension by it, such being apt in lubricating purposes to cut the bearings. Various experiments, including heating of the oil for the purpose of thinning it to aid it in deposit of sediment, also passing it downwardly through a flannel or cloth filter, have been resorted to; but this improvement consists in a novel process of filtering, more particularly petroleum, by introducing the oil under a head or pressure into a heating chamber containing water, brine, or other suitable fluid, whereby it is diluted or thinned and cut as it were, and from which, by its superior lightness and head or pressure, it is forced or passed upwards through a flannel, cloth, or other equivalent filtering material, thus effectually separating the sand or grit, the natural tendency of which being to fall, the upward course of the oil in filtering is less likely to carry fine grit with it than when the course is a downward one, while this upward filtering action, in combination with heating the oil in its passage to or through the filter, that serves to separate in a preparatory manner the sand or grit, and to induce its deposit, most effectually secures the desired result. W. Cady, of Marietta, Ohio, is the patentee."

PATENT CLAIMS.

Pertaining to Gas, Mining, Petroleum, Water etc.

FOR THE TWO WEEKS ENDING MARCH 16, 1867.

62,307—STEAM GENERATOR.—John S. Barden, Providence, R. I., assignor to A. J. Perry & Co., Boston, Mass.:

I claim the improved construction, substantially as described, of each of the sections or generators, A, A, so as to cause them to form with the internal casings, G D, the triangular sectional diving flues, F, and ascending flues, E, arranged in manner and so as to open into each other as explained.

I also claim the combination as well as the arrangement of the casings, D D and G G, with the generators, made as described, the same being so as to form triangular sectional diving and ascending flues, E F, as specified.

I also claim the arrangement as described, of the smoke recess, f, in the external side or surface of each generator, the same being as and for the purpose specified.

62,338—BURNER FOR PETROLEUM STOVES.—William E. Jervey, New Orleans, La.:

I claim the combination of the upper retort or furnace, E, the supporting arms and conductors, D, and the fluid chamber, A, when the parts are constructed and arranged and co-operate in the manner shown and described and for the purpose set forth.

62,357—COVER FOR OIL CANS.—E. A. More, St. Louis, Mo. Ante-dated Feb. 15, 1867.

I claim the lever, C, when constructed and employed substantially as herein described.

62,363—MANUFACTURE OF ILLUMINATING GAS.—Alonzo C. Rand, Union Mills, Pa.:

First—I claim so arranging the gas generator or carbureting apparatus with a series of compartments or generators with stop-cocks that the air may de driven through the liquid contained in one or more compartments, for the purpose and in the manner herein described.

Second—The combination of the test light, G, and its connection with the series of campartments or generators, a1 a2 a3 a4, substantially as and for the purpose herein described.

Third—The employment or cock or cocks, I, arranged on the lower part of the generators to connect or disconnect the same, substantially as and for the purpose discribed herein.

62,364—APPARATUS FOR CARBURETING AIR.—Alonzo C. Rand, Union Mills, Pa.:

I claim placing the tank, B, surrounded by water within the gasometer, A A, in the earth below the first points, so that the vapors shall be generated at a low temperature thereby preventing their condensation in the pipes leading to the burners, as herein set forth.

62,398—COMBINATION OF AIR AND STEAM JETS TO PRO-COMBUSTION.—George M. Copeland, Brooklyn, N. Y.:

First—I claim the combination of an air and steam jet or jets, with each other, and their introduction into a chimney, smoke flue, or other passage way, substantially as herein specified and for the purpose set forth.

Second—The combination of an air pipe, C, single or branched, and the steam pipe, or pipes, F, with each other, and with the smoke flue chimney, or other passage way in which they are placed, substantially as herein described and for the purpose set forth.

62,423—WATER METER.—Lemuel P. Jenks, (assignor to Edwin A. Eaton), Boston Mass.:

I claim, First—The arrangement of a meter or motor, of two valves, one being both for induction and eduction, the said valves being connected together and acting alternately, in separate chambers or valve tubes, when the same are used in reciprocal action with a piston, and actuated by percussion, all substantially as and for the purpose described.

Second—Actuating the valves of a meter or of a motor by the alternate percussion of the hammers upon inclined planes connected with the valves, the hammer being operated by the motion of a piston, all substantially as and for the purpose described.

Third—The arrangement and combination with the hammers of the pawls or latches with their respective springs to retain the hammers at their highest elevation, when the same are actuated by the piston discharging said pawls, all substantially as and for the purpose described.

Fourth—With a meter or motor, the device of the horns or protecting inclined planes attached to the piston for the purpose of raising the hammers, when the same operate substantially as and for the purpose described.

Fifth—The arrangement in a meter or in a motar of a piston-containing cylinder, and a valve-containing cylinder, when the valves are operated by percussion, all substantially as and for the purpose described.

Sixth—The general arrangement and construction of the machine pepresented, all substantially as and for the purpose described.

62,437—WATER WHEEL.—Rockwell Chapman, Buchanan, Michigan.

I claim a water wheel having the radial buckets, c, extending in a straight line across the face of the wheel, with the solid triangular projection, d, in rear of said buckets, and the curved passages, b, formed by the overlapping plates, the whole constructed as herein shown and described.

RE-ISSUES.

2,493—LAMP.—Alexander J. Walker, New York City, assignor by mesne assignments to Mills L. Callender. Patented June 6, 1865.

I claim, First—Sustaining the cone or deflector by supports that are bent or folded to allow of their being of increased length, for the purpose and substantially as specified.

Second—The plate, h, extending across the cone or deflector, g, and formed with the flame-spreading projections 2 2, for the purpose and substantially as set forth.

Third—The lips, 1 1, and projections, 2 2, on the plates, h, in combination with the deflector, g, and wick tube, substantially as and for the purpose set forth.

Fourth—The India-rubber ring, a, with an opening through which to fill the lamp, in combination with the rods, c, carrying the burner, as set forth.

2,494—COOKING STOVE.—Daniel E. Paris, Troy, New York, assignor by mesne assignments of Samuel B. Spaulding. Patented June 22, 1858. Additional improvements May 17, 1859. Reissued June 19, 1866.

I claim, as the invention of said Spaulding, arranging the water boiler, or reservoir back of the oven and below the top plate of the stove, substantially as described, in combination with the arrangement of flues described, or the equivalent thereof, as and for the purpose described.

Mining Share Market.

The San Francisco Weekly Stock Circular of February 16th gives the market rates of mining stock as follows:

Considerable activity has characterized the market in most mining stocks, and large sales have been made, for the most part at lower rates. Advices from the leading mines continue favorable, and the improved condition of the roads will add very materially to their receipts of bullion. The judicial proceedings recently instituted in Nevada against the Savage Company have been the subject of much comment in mining circles. If we are correctly informed, there is but little intrinsic merit in this adverse claim, and the recent heavy "short" sales may afford some clue to the vigorous efforts of interested parties to bear the stock.

HALE & NORCROSS—has not been in the market for some months past. During the present week $2,500 was bid. The bullion received by the company during the month of January amounted to $94,440 33, being the yield of 1,746¼ tons of ore, and showing an average of $54 06 to the ton

This company disbursed to its shareholders yesterday $125 per foot ($50,000), leaving a net surplus on hand of over $130,000 after paying this dividend.

SAVAGE—has steadily declined during the present week, selling at $1,910@1,930, then at $1,800@1,700 and closing yesterday at $1,790.

YELLOW JACKET—has been in active demand, advancing from $810 to $865, then falling to $795 and $785.

CROWN POINT—has met with more than usual inquiry, opening at $1,000, then selling at $975@940, and at the close obtaining $855. This company disbursed a dividend of $100 per foot to its shareholders yesterday. Deducting the $60,000 required for the dividend, leaves a cash balance in the treasury of $50,000.

GOULD & CURRY—sold early in the week at $530@540, then at $510, seller 3, and at $530@510, and closed yesterday at $530. The upper works of this mine continue in a good condition.

CHOLLAR-POTOSI—opened at $232, receded to $228, then sold at $220@212, and closed at $221.

OPHIR—improved from $145 to $202 50, then sold at $200@195, and at the close realized $193.

IMPERIAL—realized $180@185, then sold at $175, and closed yesterday at $163. This company disbursed $12 per share in the shape of dividends to its stockholders yesterday. The first clean-up of the present month amounted to $19,250.

EMPIRE—advanced from $175 to $180, and yesterday $180 was bid.....BELCHER receded from $180, seller 10, to $125, then sold at $130....BULLION fell from $22 to $14 50, and at the close yesterday sold at $17 25

New Inventions.

A NOVEL FIRE EXTINGUISHER.—A novel fire extinguisher has been tried in England with most successful results. It consists of a brass vessel, similar to that connected with an ordinary soda fountain. This fountain is charged with due proportions of water, carbonate of soda and tartaric acid. The result is a factitious soda water. The "fountain" is strapped upon the back of an individual, with a small short hose attached. By turning a stop-cock the fluid material is allowed to escape, and under a pressure of sixty or seventy lbs. to the inch, projects a stream some thirty or forty feet. The nozzle of escape is not more than one-eighth of an inch in diameter, yet such an amount of carbonic acid is discharged as to produce a most wonderful effect upon so much of the fire as comes within its reach; not even a spark is left.—the fire is absolutely annihilated. For the extinguishment of incipient fires in buildings, etc., such an apparatus might doubtless prove of essential service, and for such purposes prove valuable adjuncts to the ordinary fire apparatus.

PROTECTION TO FIREMEN.—An invention, designed as a protection to a fireman on his entrance into a burning room, has recently been tested in Quebec. It consists of a finely perforated brass ball, attached to the inner extremity of the brass nozzle of the hose, which acts as a powerful rosette, throwing a heavy spray upon his person, while he is directing the main stream upon the fire before him—thus smothering the flames all around the holder's person.

STILL another improvement in the way of fire extinguishing apparatus, has recently been devised by Mr. H. J. Johnson, of Providence, R. I., the object of which is to retain the water in the hose, at full pressure, when the engine ceases working. A faucet is attached to the nozzle, which shuts back the water whenever desirable and the extra pressure operates upon a delicately adjusted valve, in an attachment to the engines, and which in fact becomes a part of it, which opens and permits the water to flow back to the engine. This relieves both hose and engine from any extra pressure. The engine continues working as long as may be desirable, the water in meantime circulating through the valve, which ceases the instant the nozzle is opened, and the water begins to flow through the hose.

—The latest novelty in the way of destructive weapons, is a French invention by M. Perrot. He has invented three different guns. The first two has two barrels, and by the force of compressed air several balls can be projected in one second from each barrel. A cartouch box, containing a thousand balls, by an ingenious contrivance drops one into the bore of the gun after each shot. A second gun has three barrels; from each twenty balls can be projected per second, therefore, from nine hundred to twelve hundred per minute. The machinery of this gun is similar to that of the first, merely that it is mounted on wheels, and therefore, is *locombile*. In the third species, steam, air, and gas are put into requisition to project stone and combustible material of all species, and is intended to be employed in besieging a city, or storming a fort.

A NEEDLE CANNON.—Herr Von Dreyse, of Prussia, has invented a needle cannon as a companion for his needle gun. It is composed of two pieces fixed in one carraige; between them the ammunition chest is placed, and behind are seated the cannoniers. The rear portion of each cannon opens to recieve the cartridge, and the explosion is created by the bombadier leaning on a fork connected with an elastic tompion, which works alternately, firing one cannon now and then next, and so on. The cartridges drop into either piece by a mechanical arrangement. There is no recoil. The guns are invented for field practice, and some of them, a six-pounder notably, have made accurate and destructive shooting at a range of 2,000 paces.

TUNNEL COMPLETED.—The Sand Patch Tunnel on the Pittsburg and Connelsville railway is at last through. Its total length is 4,760 feet, being 1,000 feet more than the long tunnel on the Pennsylvania Central railway through the Alleghanies between Altoona and Cresson. It is intended for a double track, and is twenty-two feet wide by nineteen high.

THE MINING INTEREST REMEMBERED.—George Peabody, the eminent London banker, has donated $150,000 for the foundation and maintenance of a museum of natural history, in which special attention shall be paid to the departments of zoology, geology and mineralogy, at New Haven, Conn.

Gas Fixtures and House Furnishing GOODS,

E. V. HAUGHWOUT & CO.,

488, 490 and 492 Broadway.

Corner of Broome street, New York,

Mannfacturers and dealers in

CHANDELIERS & GAS FIXTURES

Have a large and very choice assortment of GAS FIXTURES, which they offer at reduced prices, in view of the recent fall in gold. Their

Glass and Fire Gilt Chandeliers, are of entirely new designs,

And well worthy of attention by those who wish to purchase

☞ *Fine Fixtures for their Houses.*

OFFICE OF WM. DAVIDSON,
INSPECTOR OF GAS METERS FOR THE STATE OF NEW YORK.
☞ At the above address.

Architectural Iron Works,

13th and 14th streets, near Avenue C.

BRANCH OFFICE 42 DUANE ST.,

NEW YORK.

OFFICERS: D. D. Badger, President. N. Cheny, Vice Pres. and Acting Treasurer. C. C. Gordon, Secretary, Pro Tem.

PRODUCTS:

Iron and Fire-Proof Buildings. Iron Fronts, Rolling Shutters, Roofs, Domes, Bridges, Railings, Verandahs, Balustrades, Stairs, Cornices, Columns, Capitals, Arches, Window Lintels, and Sills, Consoles, Brackets, Rosettes, Urns, Door and Window Guards, Lamp, Awning and Horse Posts, Venetian Blinds, Patent Lights, Iron Side Walks, Rolled, Rivetted and Cast Iron Beams and Girders, and all Architechural and General Iron Work.

H. M. Baily, Superindent of Works.
J. WALTER CLARK, Accountant. J. M. DUCLOS, Architect.

OREGON IRON FOUNDRY,

738, 740, 742 and 744,

Greenwich Street, New York.

CASTINGS FOR

GAS WORKS

OF ALL DESCRIPTIONS, INCLUDING

Purifiers, Exhausters, Compensators, Self-Acting Valves, Branches, Bends, &c.

FLOYD'S PATENT

Malleable Iron Retort Lid.

SABATTON'S PATENT

Furnace Door and Frame.

Refers to—J. A. Sabattan, Esq., Engineer Manhattan Gas Co—Col. A J. White, Metropolitan Gas Co.—C. C. Mowten, Engineer New-York Gas-light Co.—J. Mowten Saunders, Engineer Baltimore Gas Co.—John T. Harrison, Engineer Savannah Gas Co.

186] HERRING & FLOYD, Proprietors

SILAS C. HERRING. JAMES R. FLOYD

METROPOLITAN

GAS STOVE MANUFACTURING COMPANY.

Salesroom, 702 Broadway,

Above Fourth Street, New York.

PATENT GAS HEATING AND COOKING STOVES, RANGES, &c.

SCIENTIFIC GAS HEATING APPLIANCES,

For every known trade or profession.

Patent Petroleum or Aerovapor Stoves. Patent Kerosene Oil Stoves. Patent Portable Vapor Bath Apparatus.

Gas Stoves made by us are constructed under the immediate supervision of A. L. Bogart, Esq., Analytical Chemist and Gas Engineer. They contain recent improvements of a scientific character—by means of which a perfect combustion is obtained, and the Caloric produced, rendered chemically pure. Too much cannot be said against the use of Gas Stoves for heating apartments—when the products of combustion (Carbonic and Sulphurous Acids are emitted without purification into the atmosphere. Your Physicians will inform you, that this is a subject of vital importance) and worthy of your closest scrutiny—before purchasing. The public are invited to examine into the merits of there inventions.

Every article warranted as represented.

THOMAS CASSIDY,

Iron Founder & Pattern Maker

Corner Hudson and Park Avenues,

BROOKLYN.

Iron Store Fronts put up at short notice.

Square and Round Columns, Truss Girders, Vault Beams, Window Lintels, Sills, &c.

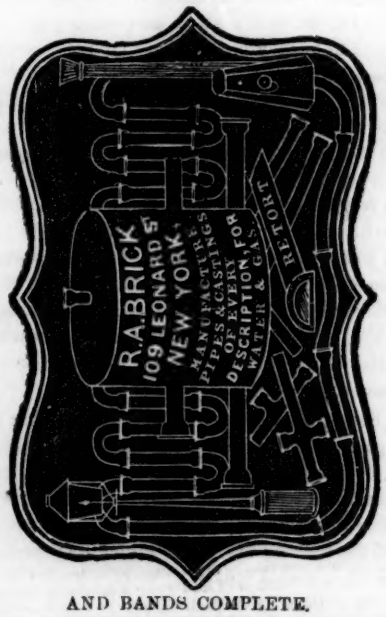
A large assortment of Railing Castings constantly on hand, or made to order, at the shortest notice.

Lamp Posts—Brooklyn Pattern.

☞ A large stock of the usual sizes of Round Columns kept on hand.

BERGEN IRON WORKS,

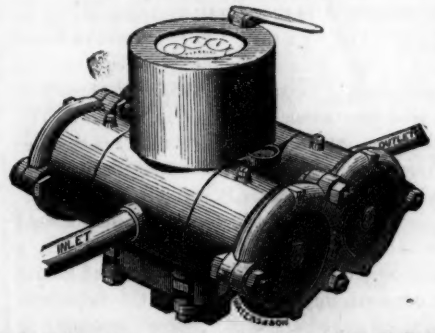
[DRIVING PIPE,



OFFICE 109 LEONARD STREET, NEW YORK.]

AND BANDS COMPLETE.

H. R. WORTHINGTON'S



PATENT WATER-METER.

This Meter is also used for the measurement of Oil —it combines

ACCURACY, SIMPLICITY, and REMARKABLE DURABILITY with such ease and certainty of motion, as to offer no appreciable obstructions to the flow of water in the pipes to which it is connected, as it runs and registers upon three inches head, or when delivering the smallest stream. These qualities, with its low cost, have caused its extensive adoption by corporations and individuals, in many of our largest cities.

HENRY R. WORTHINGTON,
61 Beekman steet, N. Y.

WILCOX & GIBBS' SEWING MACHINE.

It is entirely noiseless. A patented device prevents it being turned backward. The needle cannot be set wrong. It received the gold medal of the American Institute in 1863. Send for a circular containing full information, notices from the press, testimonials from those using the machine, &c.

JAMES WILCOX,
Manufacturer. 508 Broadway, New York.

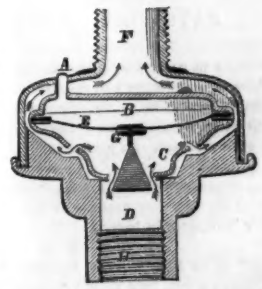
PRINCIPAL OFFICES:

New York—508 Broadway, Boston—923 Washington-st. Philadelphia—720 Chesnut-st. Chicago—133 Lake-st. Cincinnati—80 West 4th-st. London—135 Regent st. Hamburg—44 Herman-st Paris—82 Boulev'rd d Sebastopol St. Petersburgh—15 Gorochovay Vienna—9 Wildpretmarket. Brussels—12 Rue Croisade. Sydney, Austra —212 Pitt-st

NOTICE

To Gas Companies and Gas Consumers.

THOMPSON'S GAS CONTROLLER.



The only perfect SELF-ACTING REGULATOR and burner combined ever invented or known to science.

This Automatic Gas Controller works upon a simple and well-known principle n Mechanics. The lower cut fully shows its construction. The conical valve at G is attached to the elastic diaphragm, E. As the gas enters in the direction as shown by the arrows, the diaphragm E is acted upon according to the pressure of the gas, and tends to close the valve upon its seat. The chamber, B, of the inner case communicates with the air by the orifice, (A). Hence the gas below the diaphragm is only balanced by the air above it and the valve falls or rises as the pressure varies, to regulate the admission of the gas, and consequently the pressure at the burner.

This Controller will save from 25 to 60 per cent.of gas according to the pressure in the mains, and gives a beautiful, steady light, at a minimum of cost.

Late improvements have made this Controller simple, durable, and an unrivalled gas economizer.

Reference is permitted to the following gentlemen :—

Col. Chas. Roome.	Pres't Manhattan Gas Co,	N. Y.
C. H. Sand, Esq,	" Metropolitan Gas Co.,	"
J. H. Adam, Esq..	" New York Gas Co.,	"
Peter Cooper, Esq,	Cooper Institute,	"
John A. Duff, Esq.,	Olympic Theater,	"
Geo. H. Kitchen,	Inspector of Gas Meters,	"
A. L. Bogart, Esq.,	Gas Engineer,	"
Col. J. A. Sabbaton,	Engineer Man. Gas Co.,	"
Col. A. J. White,	" Met. Gas Co.,	"
J. K. Simpson,	" Cooper Institute.	"

Persons interested are invited to call at the office, 22 Pine-str't where they can see the operation by pressure guage and test meters.

M. L. CALLENDER, Agent.
22 Pine Street.

J. H. TIEMANN.

ANALYTICAL CHEMIST,

Metallurgist & Mining Engineer.

☞ GOLD AND SILVER BOUGHT.

240 PEARL ST. Cor. BURLING SLIP, N. Y.

tf

T. B. BYNNER,

IMPORTER AND DEALER IN WATCHES AND JEWELRY, Agent for the AMERICAN WATCH. Also every variety of Swiss and English watches, AT THE LOWEST MARKET PRICES.

189 Broadway, New-York.
Opppsite John Street. 62-85

THE

WASHINGTON MILL

AND

SILVER MINING COMPANY

OF ECHO DISTRICT, HUMBOLDT CO., NEVADA.

Capital Stock $300,000,

Issued for Mining Purposes.

60,000 Shares at Five Dollars each.

OFFICERS: President.—J. Clements Stocker. Vice President,— John J. Thomas. Secretary and Treasurer.—Henry Lee Reynolds. Superintednent,—William S. Sargent.

TRUSTEES: J. Clements Stocker, New York city. John J. Thomas, New York city. Lewis W. Phillips, New York city. E. Page Davis, Unionville, Nevada. Henry Lee Reynolds, New York city.

Office of the Company, 30 Pine street, New York.

☞ The mine of this company rapidly approaching that point of development which will necessitate the erection of a Mill, the Trustees are authorized to dispose of 10,000 shares of the reserve capital stock.

Mining & Petroleum Standard

AND

AMERICAN GAS-LIGHT JOURNAL,

Published on the 2d and 16th of Each Month

At No. 22 Pine Street, New York.

BRYANT, CALLENDER & CO.,

EDITORS AND PROPRIETORS.

Profs. Partz & Buck, Consulting Chemists.

SATURDAY, MARCH 16, 1867.

Wishing to make this Journal an organ of intelligent discussion to those of our readers who may wish to gain or give information on the subjects to which its columns are devoted, the publishers solicit letters from all among them who make the study of those subjects a pleasure, or a profession.

Subscribers would confer a favor upon us by remitting checks or post office money orders, as we are frequent losers where money is enclosed in letters.

☞ News Agency.—The American News Company, 119 and 121 Nassau street, New York, are agents for this Journal. Newsdealers will please send orders to them.

CONTENTS.

Improved Steam Boiler	273	Correspondence—Gold Bearing Talcose slate	277
Smith's Improved Lantern	273	Miscellaneous Items	277
Bessemer Steel Rails	273	A Wonderful Cement for Iron	277
The Process of Roasting Ores	274	Oil Filter	277
On the Future Water Supply of London	274	Patent Claims	278
To Whom the Origination of the Venango Petroleum Discovery is Due	275	Mining Share Market	278
Brevities	275	New Inventions	278
On the Combustion of Gas for Economic Purposes	276	Answers to Correspondents	280
The Oil Trade of Canada	276	Philadelphia Gas Works' Investigation	280
		Air in Gas	280

Answers to Correspondents.

"A B," N. Y.—Sulphate of lead will remove sulphuretted hydrogen from gas; but unless you can obtain it very cheaply and in abundance, it will not be advisable to employ it.

"L B," Mass.—Your theory is incorrect. Please state your case with more clearness. It will be indispensable for you to become well acquainted with the rudimentary laws of the science. Illuminating gas (carburetted hydrogen) has less specific gravity than air, and its pressure is consequently greater in the upper part of a high building than it is on the first floor.

"Tyro," Ohio.—Mr. Samuel Clegg invented the gas meter. Mr. Clegg was formerly engineer to the Chartered Gas Company of London. He subsequently published a practical treatise on the manufacture and distribution of coal gas. The fourth edition has just been published by his son, Samuel Clegg, Jr. The work is unequalled. The pressure register was invented by a Mr. Crossley of England.

"S," Mo.—Carbonic oxide gas gives a blue flame at ordinary temperatures. When highly heated it burns with a yellowish red flame. Burned in the open air it gives about the same amount of heat as hydrogen. That is, one cubic foot will raise the temperature of one lb, fourteen oz. of water from 32° to 212° Fahrenheit, while one cubic foot of hydrogen will raise the temperature of one lb. fourteen oz. of water from 32° to 212°.

Philadelphia Gas Works Investigation.

We have been favored with a copy of the Report of the Special Committee to investigate the management and affairs of the Philadelphia Gas Works, appointed by Select C u cil March 20th, 1866, with an answer thereto (dated 31st December, 1866,) by Chief Engineer Joseph Manuel, also member of Select Council from the twentieth ward, and have read [illegible] of it, exhibits and all with most careful attention, and must say we think the mountain has labored and brought forth a mouse.

It is now a year since grave charges were made against the management by the Trustees of that immense institution, the Philadelphia Gas Works, and from the publications and reports which reached us after the appointment of the special committee, of which Col. James Page was chairman, we were led to expect exposures of corruption, bribery, and mismanagement, by the trustees and chief engineer, of a startling character, but in that respect the testimony in the case has most certainly failed.

It is known to our readers that we disapprove, upon grounds of economy and public morality, that any institution like gas works in large cities should pass into the hands of a public corporation, and we did expect to be informed of many improper political appointments and extravagant expenditures to aid the dominant party, but all that is proved shows no more than the natural—the common course of any party who gets into power. It is the old quarrel between the "ins" and the "outs."

It is very true that Col. Page started on the campaign with only a kind of *if you please, sir, give testimony* under oath or affirmation, having no *legal* right to enforce it, and his commencement with Chief Engineer Manuel was anything but encouraging to him, but there were parties enough besides those who did give testimony who would probably have done so had they been subpœnaed.

The fact is we are much surprised that after so many grave charges have been made against a dozen or more gentlemen, that some *one* of the charges at least could not be substantiated. It appears like a personal or political attack upon one or more of the trustees or officials, rather than action based upon a conscientious belief of venality and fraud. The tenacity with which Colonel Page hangs on to the items for "sundries and carriage hire for Board and Councils" for 1864 and 1865, amounting to about four thousand dollars for each year, is rather a small affair, where the Board receive no compensation for their services, and the disbursements of the trust must approach three millions of dollars annually the last two years! The investigation into the coal wheeling for companies was very important as to the management of the Philadelphia Gas Works. It was fortunate the explanation was had. Such trifling matters should not have been noticed at all. It was a weakness, a palpable one, on the part of Col. Page; he should have confined the investigation to the important transactions and contracts of the Trust, especially in reference to coal, fire bricks, retorts, and meters; was there fraud it would be in those transactions, but all the contracts, and the purchases made without contract, were shown to have been correct in every particular. There was evidently a *pique* against Col. Page with or without cause as it might be, and the feeling evidently prevented a kind association with him, and operated against more candid and open declarations.

In regard to members of councils supplying material, etc., to the gas works it certainly appears to be against the law, but it appears to have been a custom for a long time, and in this investigation there is no evidence that the position of the party exercised an improper influence with the Trust. The result is that the Trust has come out with flying colors, and the Chief Engineer Manuel with greener laurels upon his brow than we really supposed he was entitled to.

We will close this article with the "summary" of Col. Page, the sentiments being abstractly in accordance with our own, and we are inclined to *believe* if there should be a change and the works pass into Democratic hands and Col Page be among the prominent officials, that upon *principle* he would institute a similar programme, for such is *now* the practice of political parties.

COL. PAGE'S "SUMMARY."

"To sum up the whole, the failure in the management of the gas works may be largely attributed to the introduction of politics, in the appointment of the trustees and their employees.

"Commenced years back, this evil has grown in force and intensity. Certain it is that corruption once begun goes on increasing, and the last year will always be the worst. Each set of politicians, according to the power they possess, used the works for their own ends. For a time there was a balance of strength, but in the spring of 1865 the domination of one of them became supreme, and then a wholesale discharge of their political opponents ensued, and their places were supplied with political favorites, with but little regard to fitness and capacity."

Air in Gas.

The *Sun* says gas consumers are paying for "atmospheric air instead of coal gas," which is supposed to be introduced into the gas by the manufacturers. This is an assertion which would not have been made, we presume, had the writer been conversant with the art of gas making for illuminating purposes.

No gas company would, knowingly or willingly, mix atmospheric air with the gas they dispense to consumers. All gas companies make gas of a certain quality or illuminating power—in this city about 12 or 14 candles power—and the addition of ten per cent. of atmospheric air as assumed, will so depreciate the illuminating power, that in the ordinary burner and at ordinary pressure, there will be a loss of 67 per cent. of the illuminating power of 12 candle gas. With one per cent. of air even, the loss will be six per cent.—with 2 per cent. of air the loss will be 11 per cent., and so on, until at 15 per cent. of air the loss will be 80 *per cent. of light.*

Hence is apparent the folly of any sane person trying to increase the volume of gas at such an enormous loss of light when the expense of keeping up the standard candle power, by supplying the additional carbon necessary, would quadruple the slight gain in volume as measured at the meter.

Journal of Applied Chemistry.—We cannot refrain from expressing our gratification with the general character and appearance of this valuable paper.

It cannot fail to meet the wants of a large, and we trust, a growing class of persons throughout the country. It aims to practicalize and simplify chemistry as applied to the arts, manufactures, metallurgy, and agriculture. There is no trade, business, calling or profession, even, that is not more or less dependant upon the science of chemistry, and no where can a knowledge of its daily practical operations be so readily obtained and where it can be immediately understood and applied, as in a journal of this description.

The article on the adulterations and falsifications of food and other articles and commodities are very useful, and especially deserving a perusal of all who eat and drink with a view to health, strength and longevity. We hope to see this subject agitated until legislation steps in to prevent frauds of this kind, which are nothing less than criminal.

The editorial management of this journal is conducted by Professor H. Dussance, assisted by Dr. H. Enri, and the staff of editors and reporters of Dexter & Company, in New York, Philadelphia and Boston, where it is published simultaneously.

—A new method for manufacturing gas by introducing petroleum with lime water into the retorts when charged with coal, has been patented. It is claimed that the cost of the gas is 30 or 40 per cent. less than when made with coal only.

New Books.

STATISTICS OF THE COAL TRADE OF THE UNITED STATES MOVED TOWARDS THE SEABOARD, FOR 1866, TO WHICH ARE ADDED THE PRIZE ESSAYS OF MINING BITUMINOUS COAL. PUBLISHED IN THE "LONDON MINING JOURNAL" IN 1860.

This is a pamphlet containing in a small space statistical and other information about coal mining, transportation, etc., of great value to all who are interested in these matters. It is for sale by D. Van Nostrand, publisher, 192 Broadway.

We are also pleased to direct the attention of gas engineers, and all who are desirous of information upon gas matters, to the advertisement of the same house in another column.

Central Pacific Railroad—Cars Running.

The San Francisco *Bulletin* says that when the heavy December storm began, the cars of the Central Pacific Railroad had just commenced running to Cisco, twenty-three miles beyond Alta, and within twelve miles of the summit of the Sierra Nevada. All that portion of the road-bed was entirely new, and consisted largely of heavy cuts and fills. It was expected that there would be considerable settling and washing of the grade, and there was. That portion of the road which was in running order during a previous winter or two, and had been repaired after its first experience with the rains, stood the season admirably, the cars making regular trips to Alta. Beyond Alta there was a stoppage of several weeks, which was falsely attributed to deep snows, and made an argument to revive the exploded prejudice against that particular route. The snow was really never the slightest obstacle. No difficulty was found in keeping the track clear. But the new road-bed had naturally suffered from the severe ordeal of excessive moisture. The damages inflicted have, however, been repaired, and the cars have resumed their trips to Cisco. It is probable that by another winter this portion of the track will be as solid as the other. There is a large force of laborers making grades on the eastern slope of the mountains, and after the melting of the snows the road will be completed on this side from Cisco to the summit.

Colored glass when heated so as to be luminous emits the same light which, at ordinary temperatures, it absorbs; thus, red glass gives out or radiates, when heated, a greenish light, and green glass a red light. This phenomena is due to the long known principle that the radiating power of different substances is directly proportionate to their absorptive, and inverse to their reflective power.

HEAVY WORKS.—Krupp's great steel works at Essex, England, cover 400 acres of ground, consume 750 tons of coal daily, use the steam of 120 boilers, burn 7,000 flames of gas, and give employment to over 800 men, whose wages amount to nearly £400,000 a year. The establishment last year turned out upward of 50,000 tons of cast steel.

JOB PRINTING.

STOCK CERTIFICATES,
ASSESSMENT RECEIPT BOOKS,
TRANSFER JOURNALS,
CIRCULARS,
HAND BILLS,
CARDS,
BILL HEADS,

And every kind of Job Work that may be desired, executed at the office of The AMERICAN GAS-LIGHT JOURNAL, No. 22 Pine street, New York.

SUPERINTENDENT.

PARTIES DESIROUS TO SECURE THE SERVICES of a SUPERINTENDENT of GAS and WATER WORKS who has had an experience of twenty years in the above business, and who can give the best of reference, can do so by applying soon by letter or otherwise, to the Editors of this Journal.

WORKS ON THE MANUFACTURE OF GAS.

CLEGG'S PRACTICAL TREATISE ON THE MANUFACTURE and DISTRIBUTION OF COAL GAS, 4 to. cloth, $10 50.

THE ANALYSIS, TECHNICAL VALUATION, PURIFICATION and USE OF COAL GAS. By W. R. Bowditch. 8vo. $6 25.

THE GAS WORKS OF LONDON. By Zerah Colburn. 75c.

THE GAS CONSUMERS' GUIDE. 50c.

GAS WORKS and MANUFACTURING OF COAL GAS. By S. Hughes: 12mo. $1 50.

For sale by

D. VAN NOSTRAND,
Publisher and Importer, 192 Broadway.

J. S. PHILLIPS, C. E. M.,

MINING ENGINEER, Etc.,

from Cornwall, who came to work Ledges for a New York Company at Humboldt, Nevada, is free for Examination or Superintendence of Mines, in consequence of his immediate condemnation and abandonment of those operations.

REFERENCES:—Messrs. Daniels, Crozier, Coe, & Co., Bankers, etc., 22 Nassau street, New York. Orders by Telegram, Humboldt City, Nevada. n74-3t

BIRD, PERKINS & JOB,

IMPORTERS OF

COAL FOR GAS, STEAM AND IRON

MANUFACTURES.

Agents for the sale of the **Westmoreland** Coal Company's celebrated

GAS COAL,

and the Consolidation Coal Company's "Ocean Mine"

CUMBERLAND COAL.

Particular attention given to the charter of vessels at the lowest freights.

39 INDIA WHARF, Boston. 104 WALL STREET, N. Y.

BROOKLYN TUBE WORKS.

B. T. BENTON,

MANUFACTURER OF

WROUGHT IRON AND GALVANIZED

TUBES,

For Steam, Water, or Gas.

MANUFACTORY AND OFFICE,

Corner John and Adams Street, Brooklyn.

ALSO

58 John Street New York.

JOHN P. NESSLE JAMES A. TAYLOR.

Nessle & Taylor,

MANUFACTURING ENAMELERS

OF

IRON AND OTHER METALS.

97 Water street, Brooklyn.

Notice to Companies Operating in Lands, Mines, Railroads, etc.

AN ENGINEER AND GEOLOGIST WHO HAS had long experience in the Coal-fields, Collieries, Furnaces, and various descriptions of Mines, and in building Inclined Planes on prominent Railroads of the country, etc., is prepared for an immediate engagement. Can give suitable references. Address

ENGINEER AND SUPERINTENDENT,
Lock Box 40, Richmond, Va,

BAY STATE FIRE-BRICK

—AND—

CLAY RETORT WORKS

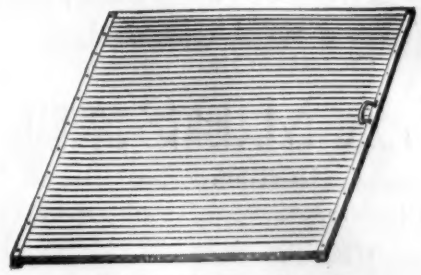
CHELSEA, MASS.

DAVIS & CHADDOCK,

MANUFACTURERS.

Office Nos. 125 and 127 Water-st., Boston.

Also agents for the sale of J.K. BRICK & Co's, Clay Retorts, Fire-Brick, Gas-House tile, etc. 66tf



JOHN L. CHEESMAN,

MANUFACTURER OF PATENT CONICALLY SLOTTED SOLID WOOD TRAYS.

Two hundred per cent. cheaper than Iron and will last twice as long.

☞ All persons are cautioned against purchasing of any other person. Orders received by mail, or otherwise. JOHN L. CHEESMAN,
147 and 149 Ave. C., New York City.

NEW SYSTEM OF VENTILATION.

—BY—

HENRY A. GOUGE.

☞ Pamphlets sent free. Address Henry A. Gouge, 254 Broadway, New York.

WANTED—A SITUATION BY A PRACTICAL **GAS ENGINEER** of experience. Can lay Mains and Service Pipes, and do all fittings required for Gas. Has been in his present situation eight years, and can give testimonials as to character and ability. Would not object to go abroad.

WILLIAM HUMPHREYS,
*tf Supd't Gas Works, Waterford, N. Y.

WANTED—A SUPERINTENDENT FOR A GAS WORKS in the West. Must be competent to take charge of books, and thoroughly understand the business. Address G. A. GORDON, No. 40 Spruce street, N. Y. 3t

OPPOSITION LINE.

TO CALIFORNIA VIA NICARAGUA,

SAILING EVERY TWENTY DAYS,

With Passengers, Freights, and United States Mails, on the following first class Steamships:

On the Atlantic Ocean.	On the Pacific Ocean.
Steamship Santiago De Cuba.	Steamship America.
" San Francisco.	" Moses Taylor.
" Dakota.	" Nevada.

PASSAGE AND FREIGHT AT REDUCED RATES.

Sailing days from New York.

1866	December 20th,	January 10th and 30th.
1867.	February 20th,	March 10th and 30th.
"	April 20th,	May 10th and 30th.

And so on at intervals of twenty days leaving on the Saturday previous, when a regular sailing day comes on Sunday.

For further information, apply at the Company's office, 177 West-st. corner Warren-st. N. Y.

66tf D. N. CARRINGTON, Agent.

THE MINING & PETROLEUM STANDARD AND AMERICAN GAS-LIGHT JOURNAL, is published at No. 22 Pine Street opposite the Sub-Treasury Building on the 2d and 16th of every month, and is a recognized official organ of—

LIGHT, HEAT, MINING INTERESTS.
PETROLEUM, WATER-SUPPLY, AND
SCIENTIFIC SUBJECTS GENERALLY.

TERMS.

SUBSCRIPTION—Three dollars per annum in advance.

ADVERTISEMENTS.—One dollar per inch in column for each insertion. Large space or long time by special contract.—Payable in advance.

☞ No Advertisement less than $2 00.

AGENTS

NEW YORK—AMERICAN NEWS COMPANY, 119 and 121 Nassau street.
BOSTON—S. M. PETTENGILL & Co., No. 6 State Street.
PHILADELPHIA—JOY, COE & Co., No. 441 Chestnut st. cor. 5th.
Germany ... ...B. WESTERMAN & Co., of New York.
Great Britain....TRUBNER & Co., 60 Paternoster Row, London.
France..... } LE JOURNAL DE L'ECLAIRAGE AU GAZ, 25 Boulevard Poissonnière.
Brussels, Belgium—HENRI BERGE.

☞ All communications to be addressed to "The Editors," No 22 Pine Street, New York.

ALBERT C. KUCK,

Manufacturer and Dealer in

COAL OIL

LAMPS,

CHIMNEYS,

BURNERS,

WICKS,

SHADES,

BRACKETS,

AND

CHANDELIERS

In all varieties and at manufacturers' prices.

AGENT FOR THE CELEBRATED

"Eureka" and "Nonpareil" Lanterns.

FRUIT JARS OF ALL KINDS AND SIZES.

57 FULTON STREET, NEAR CLIFF St.,

NEW YORK.

F. H. LOVELL & CO.,

Successors to Alfred Bliss & Co.

MANUFACTURER AND JOBBERS OF

KEROSENE

LAMPS

CHANDELIERS,

BRACKETS,

AND

Lamp Trimmings

GENERALLY.

Station, Sugar House, Street and Coal Oil Lanterns.

No. 233 Pearl Street,

NEW YORK.

139-182 Illustrated catalogues and price lists furnished on application.

NEW YORK LAMP COMPANY,

259 Pearl Street, New York.

We Would call especial attention to our recently improved

UNION BURNER,

which now burns without SMOKE OR ODOR. With Coal or Petroleum Oil makes the cheapest light known,

One Cent for Eight Hours.

The improved Union Burner without chimney, for a hand or portable night lamp is unrivalled.

Patented in the United States, England, France and Belgium.

NEW YORK LAMP CO.,

58 259 Pearl-street, near Fulton, New York.

Something New and Useful.

A POCKET LANTERN, which, when folded, occupies the space of a cigar case, and when open gives a good light. The most convenient article for any one who is liable to be out at night. Sample sent by mail on receipt of one dollar.

Address

NEW YORK LAMP CO.,

57 259 Pearl-street, New York.

The Aladdin No-Chimney Burner

GIVES A BRILLIANT LIGHT WITHOUT THE use of a chimney. Fits on to almost all kerosene lamps. It is the best no-chimney burner made, and no family should be without them. Samples sent by mail on receipt of 50 cents.

Address

NEW YORK LAMP CO.,

57-62 259 Pearl-street New York.

R. L. DELISSER & CO.,

DEALERS IN MINERAL LANDS

—AND—

PATENT RIGHTS,

No. 69 Beaver St., NEW YORK.

152-176

WILLIAM ELTING

Manufacturers Agents for the Sale of

PORTABLE AND

Stationary Steam Engines,

BOILERS AND MACHINERY,

No. 65 Liberty-St, NEW YORK.

☞ Leather and Rubber Belting supplied at usual rates. Circulars sent on application. 55-78

MOREY & SPERRY,

Manufacturers of

HEPBURN & PETERSONS, AND BEATH'S

Amalgamators, Stamp Mills,

Quartz Crushers, and other

MINING MACHINERY.

ALSO AGENTS FOR

Foundries in San Francisco, Cal., and are prepared to make time contracts to erect Mills completed, on the premises in California, Nevada and other Territories.

Office No. 95 LIBERTY ST., Rooms 10 & 11.

152-176 **New York.**

A. HITCHCOCK,

Inventor and Manufacturer of the

Cam Quartz Breaker and Pulverizer,

REVERSIBLE ROLLER MILL,

IDAHO MILLS & AMALGAMATORS,

Adapted to All Kinds of Power.

Unequalled for utilizing power—avoiding friction and wear,—rapidity of work, and facility of transportation and adjustment.

Also, **Hitchcock's Adjustable Tubular Flue-cleaning Boiler,** and other valuable Patents, for which license to manufacture will be granted on reasonable terms.

Circulars furnished on application.

53-76 *Office No. 4 & 6 Pine Street, New York.*

GEO. H. BRONSON,

132 Maiden Lane, New York,

Dealer in

Paraffine Machinery Oil,

From PURE CANNEL COAL, adapted to all classes of

Stationary Machinery,	Woolen Factories,
Locomotive Engines,	Cotton Spindles,
Railroad Cars,	Sewing Machines, &c.

Paraffine Wax and Paraffine Wax Candles. Also the best brands of Burning Oils. All Oils guaranteed to answer the purpose for which they are recommended.

57 80

D. B. GRAY,

DEALER IN ALL KINDS OF

INDIA RUBBER GOODS

Vulcanized Machine Belting,

Conducting, Hydrant, and Engine Hose,

GUM STEAM PACKING,

Amidon's Improved Clothes Wringer,

And all kinds of Useful and Fancy Rubber and Vulcanite Goods,

No. 201 Broadway,

Middle of the Block between Fulton and Dey Streets, NEW YORK.

WILLIAM S. CARR & CO.,

Succesor to Sawyer & Co.,

SOLE MANUFACTURERS OF

Carr's Patent Water Closets,

URINAL VALVES, &c.

Also Manufacturers and Dealers in PLUMBING MATERIALS OF EVERY DESCRIPTION, Plumbers' Brass Works, Earthen Ware, Pumps, Iron Drain Pipes, Traps and Sinks, Copper Bath Tubs, Showers, &c., &c.

OFFICE AND MANUFACTORY

149, 151, 153, 155, 157 Centre Street, cor. Canal,

NEW YORK.

Illustrated Catalogue and Price List sent on application.

152-176

CHARLES H. REICHMANN,

Manufacturer and Jobber of

LAMPS,

Petroleum Stoves, &c.

AND IMPORTER OF

Porcelain Shades,

WICKS, &C.,

No. 45 Fulton St.,

[Bet. Pearl and Cliff]

NEW YORK.

ALL ORDERS promptly filled for his Patent Petroleum Stoves or Lamp Heaters, which are acknowledged to be superior to any other article of the kind now in use, as regards economy in consumption of oil, as well as simplicity of construction.

These Cooking Apparatus are used like any coal oil lamp, being provided with a sheet metal chimney, in consequence of which they burn without oder or smoke. They radiate no heat into the room, and are therefore very desirable in hot weather.

Also, Nursery and Night Lamps combined, a superior and cheap article for nursery or sick room; has a kettle, cup and pan, complete.

PERCE'S MAGNETIC GLOBES,

AND

PERCE'S MAGNETIC OBJECTS.

A beautiful Terrestial Globe, elegantly mounted and colored, and supplied with

MAGNETIC MEN.
MAGNETIC LADIES,
MAGNETIC SHIPS,
MAGNETIC STEAMERS,
MAGNETIC FLAGS,
MAGNETIC LIONS,
MAGNETIC BEARS,
MAGNETIC ELEPHANTS,
MAGNETIC LIGHTHOUSES,
etc., etc., forming a
MINIATURE MAGNETIC WORLD.

PERCE'S MAGNETIC GLOBE has won the warmest ecomiums from the press; from men of science, and from all lovers of the beautiful and useful in science. In art, wherever it has been seen. As an article of HOUSEHOLD FURNITURE, it is elegant and useful; "as useful," says the New York *Independent*, "for the entertainment and instruction of the little ones at home as the piano, or any other instrument for domestic amusement and instruction."

"PERCE'S MAGNETIC GLOBES AND MAGNETIC OBJECTS afford a wide field for many pleasing and surprising experiments; and with it, aided by the explanations which accompany it, our young readers will be able to conjure up many interesting illustrations and games which they will find profitable and amusing."

STYLES AND PRICES.

Perce's Magnetic Globe, 5 in. dia., Plain Stand,	$ 5
Perce's Magnetic Globe, 5 in. dia., Brass Meridian,	7
Perce's Magnetic Globe, 7 in. dia., Plain Stand,	10
Perce's Magnetic Globe, 7 in. dia., Brass Meridian,	25
Perce's Magnetic Globe, 12 in. dia., Plain Stand,	20
Perce's Magnetic Globe, 12 in. dia., Brass Meridian,	25

The Globes of all the above sizes and styles are finished in the highest style of the art, are mounted on polished black walnut stands, and will form an elegant and attractive ornament for the parlor, library or drawing-room.

One dozen of Perce's Magnetic Objects, with plainly written direbtions, accompany each globe without additional cost.

All Globes and Objects are packed neatly in boxes, and will be sent safely any distance by express, freight paid, on receipt of price.

CHARLES SCRIBNER & CO., Publishers,

151 No. 124 Grand-st., New-York.

EMPIRE LINE

FOR SAVANNAH, GEORGIA,

Every Saturday, the elegant Side-Wheel Steamships

SAN SALVADOR,

Commander, Joshua Atkins, and

SAN JACINTO,

Commander, Winslow Loveland.

Every SATURDAY, from pier 13 North River.

Have been placed on the route to Savannah by the Atlantic Mail Steamship Company of New York, and are intended to be run by them in a manner to meet the first class requirements of the trade.

The cabin accommodations of these ships are not excelled by any Steamers on the coast, and although their carrying capacity is large, their draught of water enables them to insure a passage without detention in the river.

San Jacinto,	Saturday,	Oct.	6	San Jacinto	Saturday,	Nov.	3
San Salvador,	..	"	13	San Salvador	..	"	10
San Jacinto,	..	"	20	San Jacinto	..	"	17
San Salvador,	..	"	27	San Salvador,	..	"	24

Returning, leave Savannah every Saturday at 3 o'clock, P. M.

Bills of Lading furnished and signed on the Pier.

For further particulars, engagement of Freight or passage, apply to

GARRISON & ALLEN, Agents,

No. 5 Bowling Green.

Agent at Savannah, B. H. HARDEE.

MANHATTAN

Fire Brick & Enamelled Clay Retort Works,

MAURER & WEBER,

(Of the late firm of B. Kreischer & Co.)
PROPRIETORS.

Office & Works in 15th street, Avenue C,

MANUFACTURERS OF

Fire Brick and Tiles,

OF ALL SHAPES & SIZES,

Fire Mortar, Clay and Sand.

☞ Articles of every description made to order, at short notice. (135

HY. MAURER. ADAM WEBER.

NEW YORK

Fire Brick and Clay Retort Works

☞ *Established in* 1845, ☜

(Branch Works at Kreischerville, Staten Island,)

B. KREISHER,

Office 56 Goerck St, cor. Delancey, New York.

GAS RETORTS, TILES and FIRE-BRICK of all shapes and sizes.
FIRE MORTAR, CLAY, and SAND.
Articles of every description made to order at the shortest notice.
B. KREISCHER.

J. K. BRICK & Co,

BROOKLYN CLAY RETORT,

—AND—

FIRE BRICK WORKS,

VANDYKE STREET, BROOKLYN, N. Y.

JOSEPH K. BRICK, EDWARD D. WHITE.

J. H. GAUTIER & CO.,

MANUFACTURERS OF

Gas Retorts, Tiles and Fire Bricks,

Black Lead Crucibles, and Carburet of Iron Stove Polish,

JERSEY CITY, N. J.

Refer to—Manhattan Gas Light Co., New York. [135

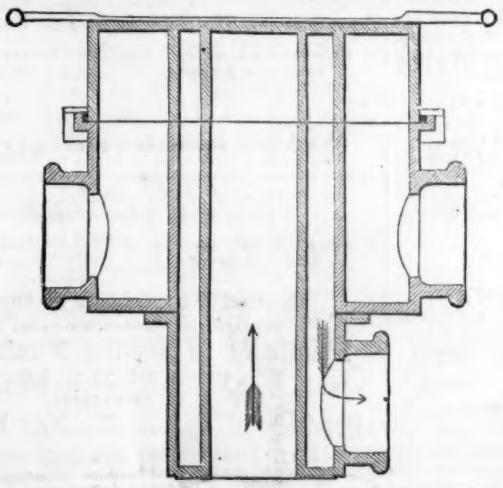
Philadelphia Fire Brick Works,

Corner of Vine and Twenty Third sts., Philadelphia,

JOHN NEWKUMET,

Manufacturer of all kinds of FIRE-BRICK, GAS-HOUSE TILES, to suit all the different plans in use. Clay Retorts and Dentists' Muffles. Orders filled at short notice.

PATENT DRY CENTRE VALVE.



The **American Meter Company** invite the attention of Gas Engineers and Gas Light Companies to the PATENT DRY CENTRE VALVE, which is very superior to the HYDRAULIC CENTRE VALVE, and much more durable, besides being less expensive, and not likely to leak or get out of order. It has been successfully introduced at the following Gas Works, where reference may be had of its satisfactory performance:

Detroit, Mich.....	16 inch.	Louisville, Ky.....	6 inch.
Philadelphia, Pa.....	12 "	Covington, Ky.....	6 "
Patterson, N. J.....	12 "	Zanesville, Ohio.....	6 "
Pittsburg, Pa.....	10 "	Indianapolis, Ind.....	6 "
Cleveland, Ohio.....	8 "	St. Joseph, Mo.....	4 "
Bloomington, Ill.....	8 "	Maysville, Ky.....	4 "
Meadville, Pa.....	6 "	Troy, Ohio.....	4 "

Having the Patterns complete for each size, from four inches to sixteen inches we are prepared to furnish them at short notice.

AMERICAN METER COMPANY,
512 West 22d Street, New York.
22d and Arch Street, Phil'a.
23 West Street, Boston.

PRINCE'S METALLIC PAINT.

AN INDESTRUCTIBLE COATING FOR

IRON, TIN, and WOOD.

It consists of seventy-two parts Oxide of Iron, and twenty-eight parts Cement Lime Stone in the one-hundred pounds.

It has much more body than red or white lead. It is warranted perfectly water and fire-proof and to withstand a greater heat on metals, without scaling, than any other paint in use.

It is a perfect cover for all kinds of iron, tin, or wood-work, out-houses, and canvas coverings. It prevents and arrests the corrosion of metals, and is not affected by the action of salt, gases, acids or ammonia.

It hardens under water, as has been fully demonstrated by its application to gas-holders, by many of the largest gas companies in the United States; which companies having thoroughly tested its properties as herein claimed, pronounce in its favor over any other paints in the market, even though said at double its price.

As a coating for patterns of iron or wood, when mixed with shellac, it is much superior to beeswax, oil, or shellac alone, as has been proven at the large founderies in the country.

For patching boilers and making joints, it is considered superior to red lead, or any other preparation.

For cleaning metals it takes the place of crocus, ouge, and emery, being better and cheaper.

This Paint requires no more oil than dry lead or zinc, and much less than the ordinary mineral paints. It is free from any waste, and possesses a spreading and covering power unequaled.

Terms, by the Barrel or Half Barrel, Five Cents per Pound.

A liberal discount made to parties purchasing by the ton.

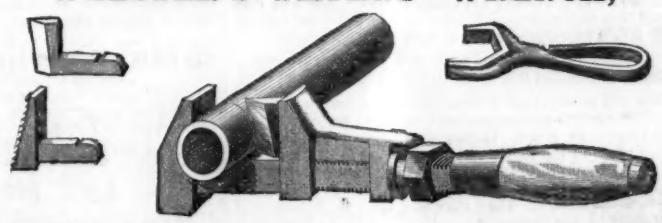
A Barrel or Ton will be forwarded to any gas companies desirous of testing its qualities, for which there will be no charge if it does not give entire satisfaction as being the cheapest and most durable of all other Paints in the market.

Also, Prince's Imperial Black Paint, and Prince's Protoxide of Iron.

DANIEL SLOAN & CO., General Agents
115 LIBERTY STREET, NEW YORK.

Local Agent—CALVIN GAY, 29 Federal st., Boston.

WEBSTER'S PATENT WRENCH,



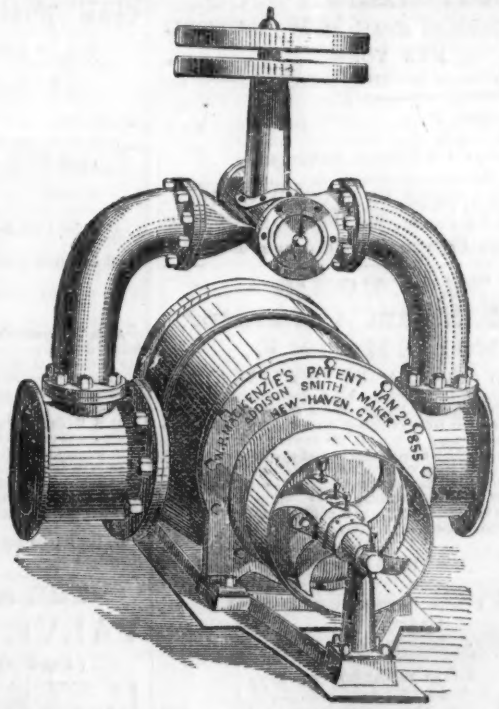
For Cutting Off & Screwing up Pipe, Round Rods, Bolts, Nuts, &c.

RECEIVED SPECIAL GOLD MEDAL FROM THE AMERICAN INSTITUTE
SEPTEMBER, 1865.

WEBSTER & CO.,
Sole Owners and Manufacturers, No. 17 Dey Street,
NEW YORK.

Smith & Sayre Manufactnring Company.

The Mackenzie Patent Gas Exhauster,
AND PATENT COMPENSATOR.



They are made to pass from 4,000 to 150,000 cubic feet of gas per hour; will increase the production and illuminating power of the gas, and add very much to the durability of the retorts, either clay or iron. The Compensator obviates entirely the necessity of water-joints, is compact, durable cleanly, not liable to get out of order, self-acting, quiet, and certain in its operation.

We are also sole proprietors and manufacturers of the

MACKENZIE PATENT BLOWER, PATENT CUPOLA AND SMELTING FURNACE.

The Blower is a Force Blast machine, durably built, and can be driven with one-third the power required to drive the ordinary Fan. The Cupolas are manufactured in sizes to melt from 1 ton to 20 ons per hour, will save one quarter of the time required by the old style Cupola, and 33 per cent. fuel. Address

B. KREISCHER, Prest.
JAS. SAYRE, Treas,
CHAS. W. ISBELL, Sec'y Office 484 Broadway, New York.

GLYCERIN

For Wet Meters, Gasoline Machines, Hydraulic Presses, &c.

We warrant our Glycerine free from acid and not to corrode the Meter metal, or to congeal or freeze at a stated temperature—also, not to evaporate to any extent The advantages and savings derived from the use of our fluid can be testified by many Gas Light Companies which we have supplied. We only refer to the certificates of H. J. Miller, Esq., President of Cincinnati G. L. and Coke Co., and Dr. J. Lawrence Smith, Professor of Chemistry in the Louisville College, and President of the Louisville Gas Co.

HARTMAN & LAIST,

Office No. 41 East 2d street, Cincinnati,—Chemical Works on Providence street, and Miami Canal, near Findlay sreet.

CERTIFICATE.

Office Louisville Gas Co., Louisville, June 28, 1865.

This is to certify, that the Louisville Gas Co. have used for about two years, the Glycerine prepared by Messrs. Hartman & Laist of Cincinnati, in their Wet Meters, and have in all instances found it to give most perfect satisfaction. Prior to the use of the above Glycerin, we had employed that manufactured by other parties, and we consider H. & L.'s superior to any we used.

J. LAWRENCE SMITH, President.

Office Cincinnati Gas Light and Coke Co., July 7, 1865.

This will certify, that Messrs. Hartman & Laist of Cincinnati, furnished this Company with Glycerin for Wet Meters some two years since. It has proved very satisfactory, having resisted the action of frost during two winters and evaporating not more than six per cent. per annum, as guaranteed by them. The standard being, for density, 15 deg. Beaume's scale. They were the first to introduce it practically to this Company. H. J. MILLER, President.

☞L. BRUCKMANN, 67 Wall street, Agent for New York.

Worthington's Steam Pump,

Extensively used by

GAS-LIGHT COMPANIES,

For sale at greatly reduced prices. Also, a new and highly successful Pump, driven by water pressure, requiring no attention or repairs, and the most economical water motor yet constructed.

☞ Patent GATES for Water and Steam-stops. ☜

HENRY R. WORTHINGTON,
61 61 Beekman-st, New York.

JOSEPH NASON & CO.,

No. 61 Beekman street, corner of Gold,

NEW YORK.

Manufacturers of WROUGHT IRON PIPES and Fittings for Steam, Gas and Water, Boiler Flues, Steam Boilers, Coils, Heaters, Evaporators, Pumps, Ventilating Machinery, and Apparatus for Warming Buildings by Steam and Hot Water.

OIL TUBING, CAST IRON DRIVING PIPE, Boring Tools, Oil Pumps, Sand Pumps, Stuffing Boxes, Tongs, Clamps, Swivels, Joints, &c. 131

BRAYTON'S
Patent Steam Generator,
AND ENGINE.

A PERFECT SUCCESS. BY THIS INVENTION, the long sought-for object has been accomplished; to wit: A means by which steam can be generated safely, so that there shall be no more danger from explosion than with the hot-air engine, and at the same time retain all the power of the steam engine. This much sought for result has at last been accomplished, and after many severe tests we feel fully warranted in offering this Steam Generator and Engine to the public as a perfectly safe power, and at the same time a cheap power As a generator of steam for heating buildings, etc, there is not its equal in use. For further information or circular, address

R. A. HUTCHINSON,
159-182 Agent, No. 8 Dey-street, New York.

H. P. GENGEMBRE'S

PATENT

Non Freezing and Non Evaporating

METER FLUID,

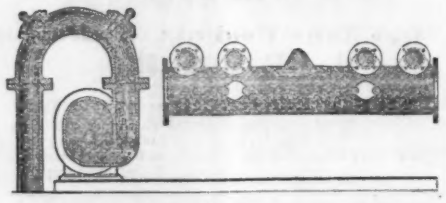
☞ Far cheaper than any other in use. ☜

For Filling Wet Gas-Meters, cheaper, in the long run, than water.

Six years in general use in works using it, to the exclusion of all other fluid, and driving the dry meter out of use, enables us to recommend the patent with perfect confidence.

For information and purchase of rights, apply to A. DOISEY, Esq., Sole Agent, Box 2,180, Cincinnati, Ohio, or to H P. GENGEMBRE, Pittsburgh, Pa.

STANLEY'S
HYDRAULIC GAS MAIN.



WILLIAM TAYLOR & SONS,
COLUMBIAN IRON WORKS,

Nos. 11, 13 & 15 Adams Street, Brooklyn, N. Y.

MANUFACTURERS OF ALL KINDS OF

Castings, Iron Buildings Store Fronts, Columns, Girders and Beams.

ALSO,

Gas Works Castings of all kinds.

Steam Engines, Mill Gearing, Hydraulic Presses for the manufacture of Linseed and Cotton Seed Oils, Sugar Mills, Single and Double Action Pumps, also Steam Pumps, Coal Oil Machinery, High and Low Pressure Boilers, Tanks, Kettles, Soap Curbs, &c.,

MADE AND REPAIRED AT THE SHORTEST NOTICE.

WM. TAYLOR. JAMES A. TAYLOR. EDWIN S. TAYLOR.

NATIONAL FOUNDRY
AND PIPE WORKS.

Office and Works—Carroll, Pike, Smallman and Wilkins Streets.

PITTSBURGH, PA.

WM. SMITH,

Manufacturer of all kinds of GAS and WATER PIPE, BRANCHES, CONNECTIONS, T's, ELBOWS, and ALL CASTINGS USED AT GAS AND WATER WORKS.

I offer special inducements to parties wishing to purchase, my Pipe is Smooth, regular in weights, and cast vertically.

N. B.—Pipe from 3-inch and upwards, cast in 12-ft. lengths.

☞ SEND FOR CIRCULAR AND PRICE LIST. ☜

149

J. FIRMIN,
Gas Fitting and Plumbing,

Nos. 64 & 66 Maiden Lane, cor. William-st.

Residence, No. 1147 Broadway, near 26th-st.

HOUSES FITTED UP WITH PLUMBING AND GAS WORK IN THE MOST MODERN AND IMPROVED STYLE. SEWERS CONNECTED. BRASS AND LATHE WORK. JOBBING IN ALL ITS BRANCHES ATTENDED TO WITH PUNCTUALITY AND DISPATCH.

GAS BILLS REDUCED.

Gas Lights perfected upon New and Unerring Principles.

REFERENCES:

At A. T. STEWART'S the gas-lights were improved and the gas bills reduced one-third, amounting to several thousands of dollars per year.—A. O. WILLCOX, No. 40 Wall-st.

At the TRIBUNE ASSOCIATION gas bill reduced upwards of one hundred dollars per month, and better lights given.—SAMUEL SINCLAIR Publisher.

At H. B. CLAFLIN'S, late Claflin, Mellen & Co., gas bill reduced—amount not yet ascertained—but it will be at the same ratio, and light improved.—Mr. BANCROFT.

At WM. SCHIEFFELIN & Co.'s, corner William and Beekman-sts., good light obtained and maintained at all parts of the premises, without additional cost—a result despaired of even by the Gas Co. owing to the deficiency of supply. No deficiency by FIRMIN'S system.

Similar results guaranteed under similar circumstances, or NO CHARGE. 65-88

THE AUBIN BALANCED
VALVE WATER METER,

(Used also for Oils and Liquors)

IS NOW IN USE BY MANY CITY WATER Companies, because of its LOW PRICE, SIMPLICITY, DURABILITY, ACCURACY UNDER ANY PRESSURE, and, (a great advantage,) because it runs with less head than any other meter used.

Manufactured by

H. Q. HAWLEY,
Albany, N. Y.

CATALOGUE of Scientific, Military, Naval and Miscellaneous BOOKS just published, and sen free on application.

D. VAN NOSTRAND,
PUBLISHER,
163 192 Broadway, New York.

PLASTIC SLATE ROOFING
JOINT STOCK COMPANY.

OFFICE 157 [Room 19] BROADWAY,

New York.

W. C. POTTER, Vice Pres't.
J. M. ALLEN, Sec. and Treas. LICENSES GRANTED.

PLASTIC SLATE

FOR

ROOFING & OTHER PURPOSES.

The process of reconstructing Slate Stone from a disintegrated state was

PATENTED FEBRUARY 21st, 1865.

It is a combination of

Pulverized Slate & Viscous Matter,

(the latter possessing qualities of geological and chemical affinity for the former,) and is a development of one of the simple but unalterable tendencies of nature.

As a Roofing Material it Stands Unrivalled.

A mastic—it adapts itself to every shape and slope. Non-combustible, impervious, non-expansive, and undecaying.

Frost does not Crack nor Heat Dissolve it.

The only roofing material ever discovered that will resist the action of the elements as long as the structure it protects. Being susceptible of little, if any wear, from exposure, and

Perfectly Fire-Proof,

It is unequalled as a coating for Railroad and Farm Buildings, Fences, Bridges, bottoms of Vessels, Vaults, etc.

Edw'd Van Orden & Co.,

Manufacturers of Fire and Water-proof

Plastic Slate Roofing Materials,

ROOFING TOOLS, &C.

Office 41 Liberty-st.

Edw'd Van Orden.
Jas. E. Dunn. NEW YORK.

MILLS CONVENIENT FOR SHIPPING.

PARTZ & BUCK

MINING ENGINEERS, METALLURGISTS

AND

ANALYTICAL CHEMISTS,

57 BROADWAY,

A. F. W. PARTZ,
C. ELTON BUCK, NEW YORK.

CHAS. HOWDON SMITH,
BROKER IN MINING STOCKS

AND OTHER SECURITIES,

No. 5 1-2 PINE STREET,

ROOM NO. 5, NEW YORK.

T. CASSIDY & CO.,

(SUCCESSORS TO P. CASSIDY,)

Dealers in Old and New

IRON, COPPER, BRASS,

LEAD, SPELTER, &c.

Corner of Bridge and John Streets,

BROOKLYN.

☞ N. B.—The highest cash price paid for the above named articles.

T. CASSIDY. 57-80 J. PEARCE.

J. W. WHEELOCK,

DEALER IN

GASOLENE.

SUITABLE FOR GAS MACHINES, ALSO FOR CARBURETTING OF GAS, &c.

70-94 **204 Pearl St., New York.**

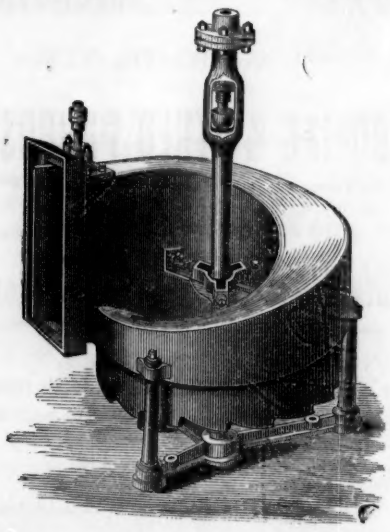
FOR SALE

THE VALUABLE IMPROVEMENT FOR SAVING and otherwise improving the gas, invented by Dr. J. S. Wood, described in the "Gas-light Journal" October 2d, 1866, is now for sale by State or County rights.

Address J. S. Wood, Patentee, No. 400 Library Street, Philadelphia, Pa.

STEVENSON'S

Helical Jonval Turbine Water Wheel,



For first-class mills and factories where great economy of wate and simplicity and durability are required.

Manufactured by the Patentee,

J. E. STEVENSON, Hydraulic Engineer,

40 Dey Street, New York,

☞ Stevenson's Jonval Turbine Water Wheel gave the highest per centage of power over all others at the trial of Water Wheels at Fairmount Works, Philadelphia, March 9th, 1860. NINETEEN WHEELS WERE TESTED. The only practical test on record.

PORTABLE CIRCULAR SAW MILLS

With STEARN'S PATENT SETS, far superior to Rack and Pinion and Screw sets. Years of wear will not cause lost motion. All plank sawed with perfectly even thickness. No time lost in setting. Suitable for sawing any kind of Lumber and Timber.

SUPERIOR MULAY MILLS

With the latest improvements, at reasonable prices.

Steam Engines and Boilers

Especially adapted to lumbering purposes.

FOR SALE.

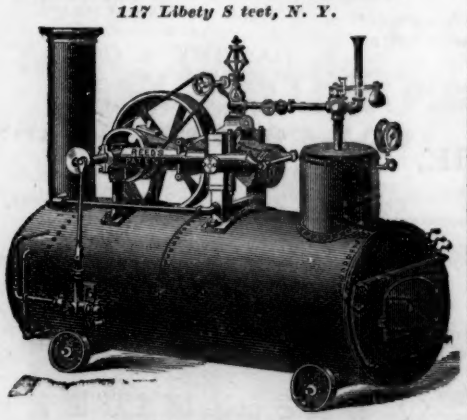
PORTABLE FLOUR AND GRIST MILLS.
WATER-WHEEL GOVERNORS.
ROTARY HAND AND POWER PUMPS.
RUBBER AND LEATHER BELTING.
CIRCULAR SAWS.

53-76

REED & COGSWELL,

CONSULTING ENGINERES,

117 Libety S treet, N. Y.



MANUFACTURERS OF

Slide & Oscillating, Stationary & Portable

ENGINES,

Of all sizes. Also furnish all kinds of MACHINERY, TOOLS, AND GENERAL SUPPLY. Drawings of all kinds of Machinery executed to order.

JOHN A. REED. [63-86] W. B. COGSWELL.

TURNBULL'S

AUTOMATIC PURIFIER.

STATE RIGHTS FOR SALE ON LIBERAL terms. For further information address by letter, WM. C. TURNBULL, care of T. C. Babcock, 59 Broadway, or to the Editors of this Journal.

EDDY'S

Kerosene Cooking & Heating

STOVES AND RANGES.

THESE COOKING STOVES WILL

☞ *Bake, Boil, Stew, Fry and Roast,*

With the greatest economy and facility, and without heating the room in which they are used. They are perfectly simple, operating like an ordinary Kerosene Lamp with a chimney, and are the only Kerosene Stoves that burn without smoke or odor.

"We have been perfectly astonished to see what a labor-saving, dirt saving and heat-saving institution is EDDY'S PATENT KEROSENE STOVE. Taking the cost of running it, and the result attained, it is the best patent in the market."—*Worcester Daily Spy.*

Our Heating and Cooking Stoves are very convenient and economical, especially where a fire is required but a few hours at a time.

Orders for Stoves may be sent through American Advertising Agency, 389 Broadway, New York.

ALEX. M LESLEY,

Manufacturers, No. 605 Sixth Ave., New York.

Send for Illustrated Circular. (136

KNITTING MACHINES

FOR

Families and Manufactu rer,

☞ *Something New and Invaluable for Family Use.*

We offer the public the simplest, strongest and best Knitting Machine in the world.

It occupies but little space—is portable and can be attached to a stand or table, weighs about 40 lbs.

It will knit a variety of Stitches—the breakage of needles is trifling—the cost of needles is insignificant and the most delicate material can be knit pure and spotless, as the needles are not oiled.

Orders for Machines may be sent through the American Advertising Agency, 389 Broadway, N. Y.

Send for a Circular—Agents wanted.

DALTON KNITTING MACHINE CO.,

137] 537 Broadway, N. Y.

WEED'S

HIGHEST PREMIUM

Shuttle Sewing Machine

Has only to be seen and operated to be Appreciated.

Call and see for yourself before purchasing. Please bring samples of various kinds of thread, (such as is usually found at stores,) and various kinds of fabric, which you know the former most popular Sewing Machines either cannot work at all, or, at best very imperfectly.

SUPERIORITY.

over any other Machine in the market will be seen at a glance.

1st It runs easily and rapidly, and is so constructed as to endure all kinds of hard usage.

2d. No breaking of threads in going over seams.

3d. No imperfect action of the feed at uneven places in the work.

4th. The Weed-stitch catches of itself, and will sew from the finest lace to the heaviest leather, and 200 cotton to coarse linen thread.

5th. The Weed Machine will do beautiful quilting on the bare wadding, without using inner lining; thus leaving it soft as if done by hand.

6th. The variety of fancy work that can be done on the

WEED MACHINE,

with so little trouble, makes it equal, if not superior, to six machines combined; for instance. it Binds, Hems, Tucks and Sews on the band at the same time, and in face, the

WEED NO. 2 MACHINE,

as before stated, is equivalent to a combination of any six ordinary machines.

Orders for Machines may be sent through the American Advertising Agency, 389 Broadway, N. Y.

Below we give a few prices:

No. 2. Oil Black Walnut, Ornamented with Hemmer.	$60,00
No. 2. Oil Black Walnut, Hall Case, Ornamented, with Hemmer.	65,00
No. 3. Extra Oil-Polished Black Walnut, Half Case, Large Table beautifully Ornamented.	75,00

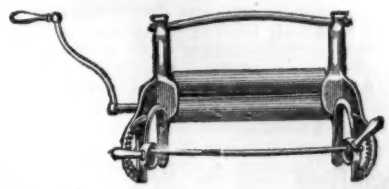
WEED SEWING MACHINE Co.,

136, 506 Broadway, New York

PUTNAM'S CLOTHES WRINGER.

IT IS THE ONLY RELIABLE

Self-Adjusting Wringer.



No Wood-work to Swell or Split. No Thumbscrews to get out of order. Warranted with or without Cog wheels.

It took the First Premium at Fifty-seven State and County Fairs in 1863, and nearly double that number in 1864, and is, without an exception, the *best* Wringer ever made. Patented in the United States, England, Canada, and Australia. Agents wanted in every town, and in all parts of the world. Energetic agents can make from $3 to $10 per day

WHAT EVERYBODY KNOWS, VIZ.:

That Iron well galvanized *will not rust.*

That a *simple* machine is better than a complicated one.

That a Wringer should be *self-adjusting, durable, and efficient.*

That thumb-screws and fastenings cause *delay* and *trouble* to regulate and keep in order.

That wood soaked in water will *swell, shrink,* and *split.*

That wood-bearings for the shaft to run in *will wear out.*

That the Putnam Wringer, with or without cog wheels, will *no tear the clothes.*

That cog-wheel regulators are not essential.

That the Putnam Wringer has *all* the advantages, and *not one* of the disadvantages above named.

That all who have tried it pronounce it the *best* Wringer ever made.

That it will wring a thread or a bed-quilt *without alteration.*

We might fill the paper with testimonials, but insert only a few to convince the skeptical, if such there be; and we say to all, *test* Putnam's Wringer. Test it *thoroughly* with *any* and any others, and if not entirely satisfactory, return it;

PUTNAM MANUFACTURING CO.—*Gentlemen:* I know from practical experience that iron well galvanized with zinc will not oxydize or rust one particle. The Putnam Wringer is as near perfect as possible, and I can cheerfully recommend it to be the best in use. Respectfully yours,

JOHN W. WHEELER, Cleveland, O.

Many years' experience in the galvanizing business enables me to indorse the above statement in *all particulars.*

JOHN C. LEFFERTS, No. 100 Beekman St.

NEW YORK, *January*, 1864.—We have tested Putnam's Clothes Wringer by practical working, and know that it will do. It is cheap; it is simple; it requires no room, whether at work or at rest; a child can operate it; it does its duty thoroughly; it saves time, and it saves wear and tear. We earnestly advise all who have *much* washing to do, with all intelligent persons who have *any*, to buy this Wringer. It will pay for itself in a year at most. HORACE GREELEY.

PRICES—$8, $9, and $10.

Sample Wringers sent, express paid, on receipt of price.

Manufactured and sold, wholesale and retail, by

PUTNAM MANUF'G CO.,

13 PLATT STREET, New York,
BENNINGTON, Vt.,
CLEVELAND O.

C. GEFRORER,

MANUFACTURER OF

Gas Heating Apparatus

OF EVERY DESCRIPTION,

Gas Burners, &c.

No. 529 COMMERCE STREET,

PHILADELPHIA, PA.

Burners for Wood, Coal Oil and Water Gas.

Gas and Lava Burner Tips

Constantly on Hand.

THE AMERICAN METER CO.

Organized under the General Manufacturing Laws of the State of New York

SAMUEL DOWN, PRESIDENT. HENRY CARTWRIGHT, VICE PRESIDENT. RICHARD MERRIFIELD, SECRETARY AND TREASURER

TRUSTEES.

SAMUEL DOWN, WILLIAM HOPPER, R. H. GRATZ, HENRY CARTWRIGHT, RICHARD MERRIFIELD.

THOMAS C. HOPPER, *Superintendent at Philadelphia.*

This Company is now prepared to furnish WET AND DRY GAS METERS, STATION METERS, GOVERNORS, PRESSURE INDICATORS AND REGISTERS, SERVICE and METER COCKS, and all other articles in their line appertaining to the use of Gas-Works.

The combination of Mechanical and Scientific Skill, and the long experience of the several members of the Company, is a sure guarantee of durability, accuracy and excellence of workmanship. Orders addressed

AMERICAN METER COMPANY,

West Twenty Second Street, New York. Arch and Twenty-Second Streets, Philadelphia. No. 23 West Street, Boston will meet with prompt attention.

Harris & Brother, Practical Gas Meter Manufacturers,

Continue, as heretofore at their old Establishment, No. 1117 CHERRY ST., PHILADELPHIA, to Manufacture

WET AND DRY GAS METERS, and all kinds of GAS APPARATUS, and furnish all articles appertaining to the use of Gas Works. ☞OUR WORK WARRANTED—Satisfaction Guaranteed. Orders respectfully solicted, and promptly attended to, by

HARRIS & BRO., No 1117 Cherry st., Philadelphia.

Messrs. Harris & Brother, Philadelphia Gas Works, February 14, 1857.

Dear Sirs;—I take great pleasure in stating that we have found your meters to register with entire correctness, and to be generally of very good quality—the number furnished by you to these works is over 5,000.

JOHN C. CRESSON, Engineer;

Office of the Gas Light Company of Augusta, Ga., March 6th, 1858.

This is to certify that having used meters manufactured by Messrs. Harris & Bro., for the last nine years, we do not hesitate to state they have given entire satisfaction in point of wokmanship and accuracy of registration; they are surpassed by none, and equaled by few manufactories in the Union; we have used meters made by other establishments but our preference is in favor of those made by Harris & Bro., of Philadelphia, Pa.

G. S. HOOKEY, Superintendent of the Gas Light Company of Augusta, Georgia.

Messrs. Harris & Brother, Philadelphia. Philadelphia, March 4, 1858.

Gentlemen—We take great pleasure in bearing our testimony to the very superior character of the meters we have received from your establishment. We have always found the workmanship all we could desire, while the accuracy and reliability of their measurement have always been satisfactory. We have used meters made by other parties, and none have given as entire satisfaction as those received from you. We are, gentlemen, very truly, yours, BIRKINBINE & MEARS.

Messrs. Harris & Brother. March 14, 1857.

Gentlemen—For the last ten years we have used in the Philadelphia Gas Works, meters made in your factory, and take pleasure in expressing my opinion to their correctness. On several occasions I have taken your meters apart, and found the material used in the manufacture of the same, to be as fine quality as is used in those imported from Europe, or made by any of the manufactur in the United States. Respectfully Yours GEORGE WIEGAND, Inspector of Gas Fittings, Philadelphia

C. GEFRORER,

MANUFACTURER OF GAS BURNERS,

529 Commerce Street, Philadelphia, Pa.

Burners for Wood, Coal Oil, and Water Gas. Brass and Lava Burner Tips Constantly on Hand.

GROVESTEIN & CO.,

PIANO FORTE MANUFACTURERS,

499 BROADWAY, NEW YORK.

THE ATTENTION of the public and the trade is invited to our New Scale, Seven Octave, Rosewood Piano-Fortes, which for volume and purity of tone are unrivalled by any that have hitherto offered in this market. They contain all the modern improvements, French Grand Action, Harp Pedal, Iron Frame, Over-strung Bass, etc., and each instrument, being made under the supervision of Mr. J. H. Grovesteen, who has had a practical experience of over thirty years in their manufacture, is fully warranted in every particular.

THE "GROVESTEEN PIANO-FORTE"
RECEIVED THE HIGHEST PREMIUM AT THE
CELEBRATED WORLD'S FAIR.

Where were exhibited instruments from the best makers of London, Paris, Germany, Philadelphia, Baltimore, Boston, and New York; and also at the American Institute for five successive years, the gold and silver medals from both of which can be seen at our warerooms.

By the introduction of improvement we make a still more perfect Piano-Forte, and by manufacturing largely, with a strictly cash system, are enabled to offer these instruments at a price which will preclude all competition.

PRICES!

No. 1,	Seven Octave,	round corners,	Rosewood, Plain Case,	$275
No. 2,	"	"	" Heavy Moulding	300
No. 3,	"	"	" Louis XIV style	325

a fac-simile of the accompanying cut.

TERMS—Net Cash, in current funds. Descriptive circular sent free on application.

MORRIS, TASKER & CO.,

PASCAL IRON WORKS

[ESTABLISHED 1821,]

PHILADELPHIA,

Manufacture Wrought Iron Welded Tubes for Gas, Steam or Water; Lap-Welded Boiler Flues, GALVANIZED WROUGHT IRON TUBES,

ARTESIAN WELL PIPES,

of Wrought or Cast-Iron, screwed together, flush inside and out; Gas-works Castings, Retorts and Bench Castings for Coal Gas-works,; Cast-Iron Street Mains, Bends, Branches, Drips, &c.

Gas and Steam Fitters' Tools, &c.

STEPHEN MORRIS,
THOMAS S. TASKER,
CHAS. WHEELER,
STEPHEN M. P. TASKER.

J. VAUGHAN MERRICK, W. H. MERRICK,
JOHN E. COPE.

SOUTHWARK FOUNDRY,

FIFTH & WASHINGTON STREETS,

PHILADELPHIA.

MERRICK & SONS, Engineers,

MANUFACTURERS OF EVERY DESCRIPTION OF GAS MACHINERY.

Retorts, Bench Castings, Condensers, Washers, Scrubbers, Wet or Dry Lime Purifiers, Coke Wagons, Fire Tools, Wrought Iron Grate Bars, Gas holders, either Telescopic or Single, with Suspension Frames complete; Wrought Iron Roof Frames, for Iron or Slate; Stop Cocks, Exhausters, Steam Pumps, Boilers and Tanks, Steam of Hand Air Pumps for providing Street Mains, Centre Seals, Governors, Wrought or Cast-Iror, Line Sieves for Purifiers, Purifier Hoisting Machines, &c., &c.

Address— MERRICK & SONS,
5th and Washington Sts, Philadelphia.

S. FULTON & CO.,

(Successors to Colwell & Co.)

Manufacturers of

PIG IRON & CAST IRON GAS & WATER PIPES.

Also, Heavy & Light Castings of every description, No. 207 North Water street and 206 North Wharves, Philadelphia.

SAMUEL FULTON, THEO. TREWENDT

TO GAS COMPANIES.

THE UNDERSIGNED DESIRES TO undertake the supervision of several small Gas-works, to visit and examine them as often as may be necessary; to obtain and inspect their coal, castings, fire-brick, and other materials; and to manage their general business in such a manner that they shall be under such supervision as is now attainable in large works, at much increased cost. Also, to advise as general Consulting Engineer and expert in practical chemistry.

CHAS. M. CRESSON,
Late Asst. Engineer of the Philadelphia Gas-works
417 Walnut st., Philadelphia.

POOLE & HUNT,
BALTIMORE, MD.,
are prepared to execute orders for
GAS-HOLDERS,
IRON-ROOF FRAMING,
And other descriptions of
Iron Work for Gas-Works, Water-Pipes, and Heavy Castings, and Machinery generally.

GEO. H. KITCHEN & CO.,

NEW PATENT

GAS APPARATUS

For Country Residences, Public Buildings, &c.,

FROM $300 UPWARDS.

EVERY DESCRIPTION OF GAS FIXTURES.

Gas Fitting in all its branches

561 Broadway,
NEW YORK.

THE WOODWARD
Steam Pump Manufacturing Company,

MNUFACTURERS OF THE WOODWARD PATENT IMPROVED

SAFETY STEAM PUMP,

—Adapted for Mining and Fire Purposes—and
Steam, Water & Gas Fittings of All Kinds.

Also, Wholesale and Retail Dealers in WROUGHT IRON PIPE, BOILER TUBES, etc.,

Woodward Building, 76 and 78 Centre Street,

corner of Worth street,
Formerly 77 Beekman Street, *New York.*
58 GEO. M. WDDOWARD, Pres't. 64

JOSEPH LENNIG,

1615, 1617, and 1619 Francis St.,

Above Ridge Avenue, Philadelphia, Pa.,

MANUFACTURER OF

Wet and Dry Gas Meters,

STATION, SHOW, & EXPERIMENTAL METERS,

Photometers, Pressure Registers, Indicators, and Gauges, Governors. Meter Provers, Centre Seals, Fluid Gauges, &c.

GAS APPARATUS

Of the most reliable and approved construction manufactured and on hand at the

UNION GAS METER WORKS.

D. PARRISH, Jr.,

GAS ENGINEER

And Contractor for Coal or Oil Gas-Works.

Estimates given for Gas-Works, Gas-Holders, or any Gas Apparatus.

205 1-2 Walnut st., Philadelphia, Pa.

Box 1956, Post Office.

To Manufacturers of Petroleum Gas.

For sale, Parrish's Patent Gas and Air Mixer, adapted to all works using Petroleum or other oils, by which rich Petroleum Gas is mixed, after it leaves the holder, with a proper proportion of air, giving it the greatest illuminating power, without smoke, through any burners. The apparatus being attached to the outlet pipe, requires no alteration of the works.

Apply at the Gas-Works of St. Nicholas Hotel, No. 63 Mercer st., N. Y., where one can be seen in operation; or address D. Parrish, Jr., St. Nicholas Hotel, New York city, or No. 1416 Arch street, Philadelphia.

SAVING OF FUEL TO PARTIES USING STEAM.
DAMPER REGULATORS.

Guaranteed to effect a great saving in fuel and give the most perfect regularity of power. For sale by the subscribers, who have established their exclusive right to manufacture damper regulators, using diaphragms or flexible vessels of any kind. CLARK'S PATENT STEAM AND FIRE REGULATOR COMPANY, No. 117 Broadway, New York.

THE AUBIN BALLANCED

VALVE WATER METER,

(Used also for Oils and Liquors)

Is now in use by many City Water Cos, because of its low price, simplicity, durability, accuracy under any pressure, and (a great advantage) because it runs with less head than any meter used. Manufactured by H. Q. HAWLEY, Albany, N. Y.

WEST'S IMPROVED PUMPS, the most Simple, Durable, and Powerful, and the Cheapest in use.

J. D. WEST & CO.,
No. 40 Cortland street,

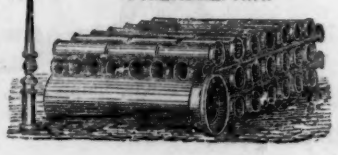
R. D. WOOD & CO.,

MANUFACTURERS OF

CAST-IRON PIPE, RETORTS, &c.

Office, 400 Chestnut Street,

PHILADELPHIA.



Great Improvement

IN

Sewing Machines.

EMPIRE

SHUTTLE MACHINE!

Patented February 14th, 1860.

Salesroom, 536 Broadway.

This Machine is constructed on entirely new principles of mechanism, possessing many rare and valuable improvements, having been examined by the most profound experts, and pronounced to be SIMPLICITY and PERFECTION COMBINED.

It has a straight needle, perpendicular action, makes the LOCK or SHUTTLE STITCH, which will NEITHER RIP nor RAVEL, and is alike on both sides; performs perfect sewing on every description of material, from Leather to the finest Nansook Muslin, with cotton, linen, or silk thread, from the coarsest to the finest numbers.

Having neither CAM nor COG WHEEL, and the least possible friction, it runs as smooth as glass, and is

Emphatically a Noiseless Machine!

PRICE OF MACHINES,

COMPLETE:

No. 1, Family Machine, with Hemmer, Feller, Gauge, Braider, & Corder, complete. - - - $60
No. 2. Small Manufacturing, with Extension Table, $75
No. 3. Large Manufacturing, with Extension Table, $85
No 3. Large Manufacturing, for Leather, with Rolling Foot and Oil Cup, 100

One-half hour's instructions is sufficient to enable any person to work this Machine to their entire satisfaction.

Agents Wanted in all Towns in the United States, where Agents are not already established. Also, for Cuba, Mexico, Central and South America, to whom a liberal discount will be given Terms, invariably CASH on delivery.

T. J. McARTHUR & CO.,
536 Broadway.

GAS-BURNERS.

WIGHTMAN BROS.,

IMPORTERS AND

SOLE AGENTS

For the United States and Canada, of

SCHWARZ'S

GERMAN LAVA GAS-TIPS

And proprietors of Winchester's Improved

LAVA TIP GAS BURNERS,

No. 25 Kilby Street,

BOSTON, MASS.

T. G. ARNOLD,

MANUFACTURER OF

GAS-BURNERS,

And Importer of SCOTCH TIPS,

224 and 226 West 21st street,

formerly No. 447 BROOME ST., New York.

Mercury Cups, Portable Sockets, Burner Pillars, Burner Pliers, &c., &c.

C. GEFRORER,

Manufacturer of

GAS-BURNERS,

For Lighting and Heating Purposes.

GAS HEATING AND COOKING APPARATUS; FITTERS' ROVING APPARATUS, &c.

529 Commerce st., bet. Market & Arch, Philadelphia

JOSEPH LEES,

Sole Agent for the sale of

Thompson's Gas Controller

in the States of

CALIFORNIA AND OREGON,

San Francisco, Cal.

Carrington & Co.'s

GENERAL

PURCHASING

AGENCY,

In Connection with all the Expresses

No. 30 Broadway,

NEW YORK.

Established 1854.

Purchases to order any article wanted from New York, or Europe, for ladies' or gentlemen's use or wear,---comfort or luxury,---from a cameo to a cashmer, a seal ring to a steam engine.

Goods purchased at current City prices, and forwarded by Express or as directed.

Commission, Five Per Cent

Remittances, with orders, can be made by Express if preferred, as all Express Agents will take orders, receipt for and forward funds, and see to return of Goods.

THE HAVANA

MEXICAN & BRAZILIAN

EXPRESS.

CARRINGTON & CO.

30 Broadway.

Express for HAVANA and ISLAND OF CUBA by regular steamships weekly.

Express for MEXICO and VERA CRUZ on the 10th and 16th of every month.

Express for ST. THOMAS, BAHIA, and RIO DE JANEIRO each month.

Packages received for United States Brazil Squadron.

Freights should be sent to our office day before sailing of steamer, with invoice, contents and value.

FINKLE & LYON'S

New Family

SEWING MACHINE

Should be known in

IN EVERY TOWN.

To accomplish this at once and save the expense of a *Travelling Agent*, we offer thus, viz:

Any one sending us orders for two machines shall receive one machine free of charge. This proposition cannot avail after we have appointed a local agent in the town.

We have now completed our *new manufacture* at a cost of some $200,000—introducing *new patents*, and such important improvements, that without fear we are able to offer the following stringent guarantee, viz: After a fair trial, if any purchaser does not prefer the FINKLE & LYON FAMILY SEWING MACHINE to any other, he can return it and have back his money.

This machine has taken many of the HIGHEST PRIZES; *is less complicated than any other first class machine; does a wider range of work without changing; requires no taking apart to clean or oil, no "lessons" to set needle, regulate tension or operate machine.*

Our new Manufacturing Machine is sold on the same terms as the Family Machine.

Please send for a circular with samples of sewing.

Finkle & Lyon S. M. Co.
No. 591 BROADWAY, NEW YORK.

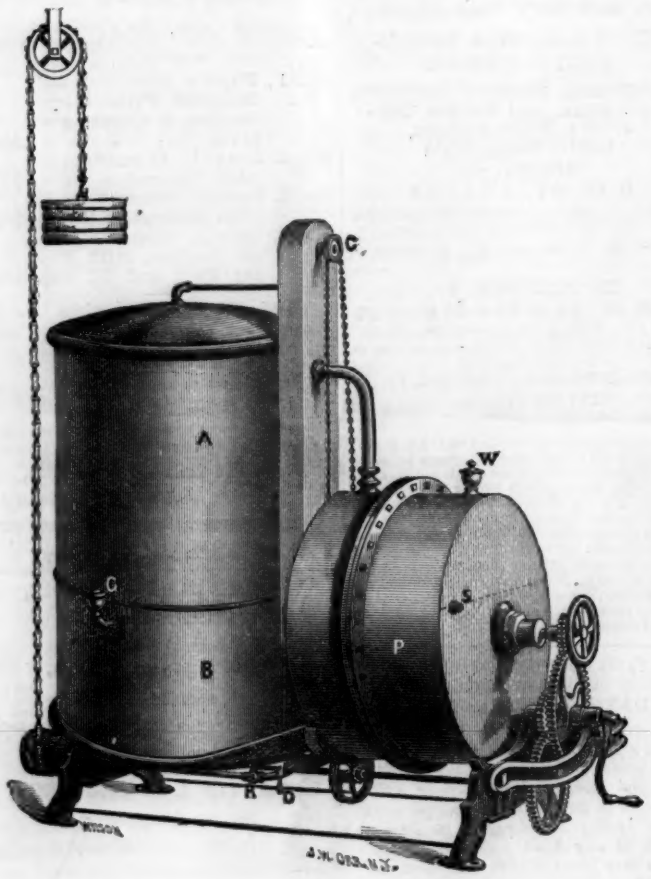
EMPIRE STATE GAS MACHINE,

LEVI STEVENS' PATENT, FOR SUPPLYING,

Dwellings. Stores, Factories and Public Buildings.

THE GAS GENERATED BY THIS MACHINE

Is a mixture of the vapor of hydro-carbon with common air. The mechanical devices employed are such as, from a long experience and critical examination into the nature of the element brought into use, seam best adapted to secure a certain and satisfactory result. GASOLINE, the liquid employed, is the more volatile portions of Petroleum, of a specific gravity of 0.6587. This liquid exposed to the action of this machine is vaporized, and a close mechanical mixture of the vapor with common air is effected. The value of the gas produced, its permaneney, its illuminating quality, and freedom from liability to condensation, depend almost entirely upon the perfect and uniform character of this mixture. Hence the great importance of mechanical means adapted to secure all the conditions requisite in a Portable Gas Machine.



THE PRICE-LISTS OF MACHINES COMPLETE;

(Boxed and delivered on the cars at the Manufactory.)

No. 1,	$150,00	5	Argand Burners.
do. 2,	250,00	10	do.
do. 3,	350,00	20	do.
do. 4,	450,00	35	do.
do. 5,	600,00	60	do.
do. 6,	1,000,00	125	do.
do. 7,	1,500,00	250	do.

This machine will produce the most brilliant and steady light without Fire or Heat, and is warranted to operate in every respect as represented.

The EMPIRE STATE GAS MACHINE is the most SIMPLE and EFFECTIVE MEANS KNOWN FOR PRODUCING GAS WITHOUT HEAT.

Its action is automatic, feeding itself with constant supplies of Gasoline, thus securing steady and uniform supplies of Gas. The gas produced is equal to the best known Illuminating Gas. It is as economical as any other, and is adapted to a wider range of use for Lighting, Heatin and Mechanical purposes. It will maintain its illuminating power under as great a degree of cold as any other. It is free from danger with the ordi nary care in using gas. Its remarkably pure and steady light is pleasant for the eye. It renders it easy for persons living remote from street gas pipes to enjoy the luxury of a pure GAS-LIGHT, at a COMPARATIVELY SMALL COST, AND WITH LITTLE TROUBLE.

☞The public are invited to witness its operations at our store. GASOLINE will be supplied by us, at market prices, or may be obtained from the various other sources of supply now going into operation.

MITCHELL, VANCE & Co., 620 Broadway, New York,

Manufacturers of Chandeliers and Gas Fixtures of every description. Also Chandeliers, Brackets, Lamps, &c., for Coal Oil, adapted to Churches, Public Buildings, Dwellings, &c.

APR. 18, 1867.